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ELEMENTS

OF

NATURAL HISTORY;

BEING

AN INTRODUCTION TO THE

SYSTEMA NATURAE OF LINNÆUS:

COMPRISING

THE CHARACTERS

OF THE WHOLE *GENERA*,

AND MOST REMARKABLE *SPECIES*;

PARTICULARLY OF ALL THOSE THAT ARE NATIVES OF

BRITAIN,

WITH THE PRINCIPAL CIRCUMSTANCES OF THEIR HISTORY AND MANNERS.

LIKEWISE

An alphabetical arrangement, with definitions, of technical terms:

IN TWO VOLUMES;

With twelve explanatory Copper-plates.

VOL. I.

CONTAINING THE FIRST FOUR CLASSES,

viz.

I. *MAMMALIA.*
II. *BIRDS.*
III. *AMPHIBIA.*
IV. *FISHES.*

O NATURE! how in every charm ſupreme!
Whoſe vot'ries feaſt on raptures ever new!
Oh for the voice and fire of Seraphim,
To ſing thy glories with devotion due!

Beattie.

PRINTED FOR T. CADELL JUN. AND W. DAVIES, LONDON;
AND WILLIAM CREECH, EDINBURGH.

1801.

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ADVERTISEMENT.

IT has often occurred to the Editor of the following Work as ſurpriſing, that, conſidering the many excellent elementary treatiſes on Botany in the Engliſh language, none have been attempted on the other branches of Natural Hiſtory. There are indeed very valuable ſyſtematic publications on moſt of the Claſſes of the Animal Kingdom; ſuch as Shaw's Zoology, Latham's Synopſis of Birds, &c.; but one work on theſe claſſes, correſponding to Lee's Botany or Hull's Elements, is ſtill wanting. The preſent is, therefore, ſubmitted to the Public in order to ſupply the defect. The idea is taken from the *Handbuchs*, or Manuals, which are publiſhed in Germany, in almoſt every ſcience; and, as Natural Hiſtory, in particular, is taught in that country with the greateſt ſucceſs, and is more univerſally ſtudied than in any other part of Europe, it was judged proper to follow a plan which experience has recommended.

The intention of the Work being to facilitate the ſtudy of Natural Hiſtory to retired perſons, or to thoſe who have no acceſs to public lectures, an Introduction is given to the different Claſſes and Orders; the characters of all the Genera in Gmelin's edition of the Syſtema Naturæ, are tranſlated and exemplified by the moſt remarkable Species, with ſhort notes of their manners and hiſtory; and, in order to make the work ſerve as a *Fauna Britannica*, the ſpecies, natives of Britain, are enumerated and marked with a B. A liſt is likewiſe given of the principal Books in each department.

The terms have been arranged in the form of a Gloſſary with definitions. This was firſt done by Lee in his Elements of Botany; and the uſe and convenience of an alphabetical arrangement of terms has ſince been generally acknowledged.

The

The Editor was obliged to forego many uſeful additions to his plan that the book might not grow too bulky for a Manual, ſuch as the inſertion of ſynonyms, references to plates, &c.

This Work, therefore, holds a middle place between the Synopſis of Natural Hiſtory by Dr. Berkenhout, and the larger treatiſes on the different branches of the Science.

The Second Volume is in forwardneſs, which will complete the Plan, and will ſpeedily be publiſhed if the preſent attempt meet with approbation.

It is evident, from the nature of this publication, that little of it belongs to the Editor. As a tranſlator he has endeavoured to be faithful; and, in collecting facts, he has not ſcrupled to borrow from every author within his reach; but whether he has made the proper uſe of his materials, muſt be left to the judgment of the public.

ELEMENTS

OF

NATURAL HISTORY.

INTRODUCTION.

§ 1.

THE WORKS OF GOD in the viſible Creation, open an inexhauſtible ſource of admiration, of pleaſure and of inſtruction to the reflecting mind.

§ 2.

Theſe works are twofold, Celeſtial and Terreſtrial. The contemplation of the firſt is the object of Aſtronomy; the inveſtigation of the latter is the province of Natural Philoſophy and Natural Hiſtory.

3 §.

NATURAL HISTORY is a deſcription of the appearances and properties of the natural bodies that are found on the ſurface of our earth. It is the Science which teaches us to know them, when preſented to us, in the eaſieſt way.

§ 4.

By the ſtudy of Economics and of Medecine we are taught to turn natural bodies to our uſe, our convenience, or our pleaſure, and to avoid the injuries we have

to dread from them; but theſe ſtudies we cannot purſue with profit, till we *know* thoſe bodies, and have inveſtigated their properties.

§ 5.

Thus Natural Hiſtory, like other ſciences, has its origin in the neceſſities and luxuries of the human race.

§ 6.

Natural bodies are ſo called when they appear as they came from the hands of the Creator; if changed in any manner by human art or induſtry, they are called Artificial bodies.

§ 7.

The elements of Natural bodies are, Water, Air, an Inflammable principle, and Earth. This is an analyſis ſufficiently minute for the Naturaliſt. It is a doctrine that was firſt taught by Empedocles, a diſciple of Pythagoras.

§ 8.

Natural bodies are of two kinds, organized and unorganized.

§ 9.

Unorganized bodies are thoſe whoſe ſimple particles are heaped upon one another, and bound together, always by certain laws. They are called Minerals or Foſſils.

§ 10.

Organized bodies are ſuch as have fluids moving by means of ſome internal power through their ſolid parts: theſe include Plants and Animals.

§ 11.

Thus Natural bodies have been divided into Three Kingdoms, called the Kingdoms of Nature. Theſe are the Mineral Kingdom, the Vegetable Kingdom, and the Animal Kingdom.

§ 12.

Minerals are unorganized compounded bodies, without life or ſenſation.

Vege-

Vegetables are organized bodies, which are endowed with a living principle, but want ſenſation.

Animals are organized bodies, which have life and ſenſation, and are capable of voluntary motion.

§ 13.

But the boundaries of the three Kingdoms of Nature are not very diſtinct. Life and the motion of ſap in ſome plants ſhew themſelves in ſo high a degree as very nearly to border on ſenſation. On the other hand, ſenſation and voluntary motion in ſome animals are ſo little obvious that theſe nearly reſemble plants. Some Lichens are diſtinguiſhed by the Naturaliſt alone from the rock on which they grow; and the foſſil ſubſtance of ſome Corals has the ramified ſtructure of a plant.

§ 14.

This approach of the three Kingdoms of Nature to one another, has given riſe to an opinion that there is a gradation, a ſcale or chain of being, proceeding from the rudeſt unorganized matter up to man. If there be ſuch a chain, a number of the links in various parts of it, are ſtill undiſcovered.

§ 15.

The number of the Natural bodies on the face of our globe is ſo immenſe*, that on a general view, the mind recoils at the attempt to inveſtigate them as impoſſible. But the invention of methodical arrangements, which are called Syſtems, has facilitated the taſk; and every natural object can now be diſtinguiſhed with certainty and facility from every other, by being traced to its place in the Syſtem of Nature.

§ 16.

The characters of natural bodies on which ſyſtematic arrangements are built, muſt be obvious; they muſt be taken from ſuch as belong to the body eſſentially

* In Gmelin's edition of Linnæus's *Syſtema Naturæ*, near 40,000 ſpecies of Natural bodies are enumerated and deſcribed.

ſentially and peculiarly; not from its internal ſtructure, which it is often difficult to diſcover, but from its external habit, from the form, number, ſituation and proportion of its parts.

§ 17.

Syſtems are either natural or artificial. By a Natural ſyſtem we underſtand that arrangement, which Nature herſelf ſeems to have obſerved; that in which natural bodies are arranged according to their moſt ſtriking reſemblances, and where thoſe bodies ſtand neareſt one another which agree in moſt properties. The external appearance or habit, as it is called, often ſhews us an affinity between natural bodies; and we perceive at once a general reſemblance, tho' we are at a loſs to expreſs it in proper words. But, as a perfect Natural Syſtem has not been diſcovered in any of the three Kingdoms, we are obliged to have recourſe to Artificial Syſtems.

§ 18.

The diviſions of ſyſtematic arrangement are arbitrary. The moſt convenient, and now the moſt generally received diviſion, is into Claſſes, Orders, Genera, Species and Varieties. This arrangement was firſt invented by Tournefort.

§ 19.

Every Natural body conſtitutes an individual. Such as reſemble other individuals in all eſſential properties and parts, are referred to one *Species*. Thoſe ſpecies that agree in certain principal properties make a *Genus*; and if there are many Genera that have certain properties in common, they form *Orders*; and ſeveral orders conſtitute a *Claſs*.

§ 20.

Orders and Genera, if too numerous, are ſubdivided into Sections.

§ 21.

Thoſe individual bodies of a Species which, in certain accidental circumſtances, depart from others of the ſame ſpecies, are called *Varieties*.

§ 22.

§ 22.

Of Species we reckon ſo many as there are different and conſtant forms in Nature; Varieties are accidental changes, which, when the accidental cauſe is removed, return to the primary form of the Species.

§ 23.

The Genera for the moſt part, the Orders and the Claſſes always, are artificial conjunctions. The Species alone are Natural.

§ 24

Natural bodies muſt have names. In denominating them we uſe the generic name along with the ſpecific name; but if this latter be too long, we then uſe what is called the trivial name. Thus, Homo *ſapiens*, Canis *familiaris*, Cocos *nucifera*, Ardeſia *tegularis*, &c.

§ 25.

The trivial name generally denotes a principal diſtinctive property of the Species in one word. It is an invention of Linnæus.

§ 26.

When a Natural Body is preſented to us, we firſt refer it to ſome Claſs in the Syſtem we make uſe of; we then trace it to its Order, and next to its Genus; but we cannot be ſaid to know it, till we have aſcertained its Species.

§ 27.

Thus Natural Hiſtory is founded on the Syſtematic knowledge of Natural Bodies; and Syſtem ſerves but as a clue to the manifold wonders of Nature.

§ 28.

If we would attain a fundamental and uſeful knowledge of Natural bodies, we muſt, 1. Study the moſt approved ſyſtems; make ourſelves acquainted with the terms of Art; and examine the characters of the Claſſes, Orders, Genera, and Species. 2. We muſt collect and learn to diſtinguiſh, and to aſcertain ſyſtematically ſuch Natural Bodies as we may meet with; we muſt likewiſe employ ourſelves in making obſervations on their origin, properties, manner of life, growth and propagation.

tion. 3. We ought to peruſe Collections of Natural bodies with diligence and attention. 4. We ſhould if poſſible viſit the native places of ſuch bodies. 5. We ſhould make ourſelves acquainted with the literary hiſtory of this ſcience, and read the beſt authors with diligence: eſpecially ſuch as treat of the Natural Hiſtory of our own country. And laſtly, we ſhould endeavour to turn the diſcoveries of Natural Hiſtory to the advantage of human ſociety.

§ 29.

The principal Books which treat of Natural Hiſtory in general, are the following:

a. Critical.

Journal des Savans. Paris 1665, et ſeq. 4to, and 12mo.

Acta eruditorum Lipſienſia. Lips. 4to, 1682, 1776.

Jo. Jac. Scheuchzeri Bibliotheca ſcriptorum Hiſtoriæ Naturalis, omnium terræ regionum inſervientium; acceſſit Iac. le Long De Scriptoribus Hiſtoriæ Naturalis Galliæ. Tiguri, 1716, 1751. 8vo.

Commentarii de rebus in Scientia naturali et medecina geſtis. Lips. 1752, et ſeq. 8vo.

Journal Encyclopedique. Bouillon 1760. 8vo.

Giornale d' Italia ſpettante alla ſcienza naturale e principalmentea ll' agricoltura, alle arti ed al commercio. Venet. 1764, et ſeq.

Joh. Beckman, Phyſikaliſch-oekonomiſche Bibliothek. Goettingen, 1769, et ſeq. 8vo.

Ed. Sandifort, Natuur et geneſkondige Bibliothek. Amſt. 1766, 4to. et ſeq.

The London Reviews, and ſome of the Magazines.

b. Syſtematic.

Car. Linnæi Syſtema Naturæ. Leyd. 1735, fol. Lips. 1788, 8vo. edit. 13. Cura Io: Frid. Gmelin.

Hiſtoire Naturelle generale et particuliere, avec la deſcription du Cabinet du Roi, par M. M. Buffon, et d' Aubenton. Paris, 1749, 1767. 4to.

J. A. Scopoli, Introductio ad hiſtoriam naturalem, ſiſtens genera lapidum, plantarum et animalium hactenus detecta. Pragæ, 1777. 8vo.

Jo. Fried. Blumenbach, Handbuch der Naturgeſchichte. Goettingen, 1782. 8vo.

Brooke's Natural Hiſtory, in 6 vols. Lond. 1763. 8vo.

Goldſmith's Hiſtory of the Earth and animated Nature, in 8 vols. Lond. 1774, 8vo.

Hill,

Hill, Sir John. A general Natural Hiſtory, in 3 vols. Lond. 1748. folio.

c. Mixed with other Matters.

C. Plinii Secundi Hiſtoriæ naturalis, libri 37. quos interpretatione et notis illuſtravit Joan. Harduinus. Paris, 1723, in 3 vols. folio.

The Hiſtorie of the World, commonly called the Natural Hiſtorie of C. Plinius Secundus, by Philemon Holland. Lond. 1601, in 2 vols. folio.

Ferrante Imperato, Hiſtoria Naturale. Nap. 1599.

Car. Linnæi, Amoenitates Academicæ. Holm. 1749, vol. 1.--x. 8vo.

Contemplation de la Nature, par Char. Bonnet. Amſt. 1764, 2 vols. 8vo.

Deliciæ Naturæ ſelectæ, oder auſerleſenes Naturalienkabinet, von G. W. Knorr. Nurnb. 1766, folio.

Opuſcoli di fiſica animale e vegetabile, del Abate Spallanzani. Modena, 1776, in 2 vols. 8vo.

Spallanzani's Diſſertations relative to the natural hiſtory of animals and vegetables, by Dr Beddoes. Lond. 1789, in 2 vols. 8vo.

Pluche, Spectacle de la Nature—Nature diſplayed, a Tranſlation. Lond. 1736, in 4 vols. 8vo.

J. A. Scopoli, Annus Hiſtorico-naturalis. Leip. 1769, 1772, 8vo.

——— Diſſertationes ad ſcientiam naturalem pertinentes. Prag. 1772, 8vo.

Obſervations ſur la Phyſique, ſur l'Hiſtoire Naturelle, et ſur les Arts, par M. l'Abbé Rozier. Paris, in 18 vols. 12mo. 1771, 1778.

Obſervations et Memoires ſur la Phyſique, ſur l'Hiſtoire Naturalle, &c. par Rozier. Paris, 1773, et ſeq. 4to.

Der Naturforſcher. Halle, 1774, et ſeq. 8vo.

J. S. Schroeter Abhandlungen uber verſchiedene Gegenſtaende der Naturgeſchichte, in 2 vols. 8vo. Halle, 1776.

Miſcellaneous Tracts by Benjamin Stillingfleet, 8vo. Lond. 1762.

Miſcellanies, by the Hon. Daines Barrington, 4to. Lond. 1781.

The Naturaliſts Miſcellany; or coloured figures of Natural Objects, with deſcriptions, 8vo. Lond. 1789, et ſeq.

Tracts and Obſervations in Natural Hiſtory, by Robert Townſon, 8vo. Lond. 1799.

d. Works of Learned Societies.

Philoſophical Tranſactions, giving ſome account of the undertakings, ſtudies, and labours of the ingenious in many parts of the World. Lond. 4to. vol. 1. 1665, et ſeq.

The ſame abridged by Lowthorpe, &c. Lond. in 11 vols. 4to.

Tranſactions of the Royal Society of Edinburgh. Edin. 4to. 1788, et ſeq.

Tranſ-

Tranſactions of the Royal Iriſh Academy. Dublin, 4to.
Tranſactions of the Linnean Society of London. Lond. 1791 et ſeq. 4to.
Tranſactions of the American Philoſophical Society. Philad. 1771, 4to. et ſeq.
Miſcellanea curioſa, s. Ephemerides medicophyſicæ, Academiæ Naturae curioſorum. Norimb. 1670, 1706, 4to.
Ephemerides Acad. nat. cur. ſive obſervationes medico-phyſicae. Norimb. 1712, 1722, 4to.
Acta phyſico-medica Acad. Caes. Leopoldino carolinae, nat. cur. Norimb. 1727, 1754, 4to.
Nova Acta phyſico-medica, 1757, 1783, 4to.
Saggi de naturali eſperienze fatte nell' academia di Cimento. Firenz. 1667, folio.
Eſſays of natural experiments made in the Academy del Cimento, by Richard Waller. Lond. 1684, 4to.
Hiſtoire de l' Academie Royale des Sciences. Paris, 1733, et ſeq. 4to.
Miſcellanea Berolinenſia ad incrementum ſcientiarum, in 7 vols. 4to. Berl. 1710.—1743.
Hiſtoire de l' Academie royale des ſciences et belles lettres de Berlin, avec les memoires. Berl. 1746 et ſeq. 4to.
Nouveaux Memoires, &c. Berl. 1770 et ſeq.
Commentarii Acad. ſcient. imper. Petropolitanæ, 1726, 1752.—Peters. 4to.
Novi Commentarii, &c. Peterſb. 1750, et ſeq. 4to.
Acta Acad. ſcient. imper. Petrop. 1781 et ſeq. 4to.
Commentarii de Bononienſi ſcientiarum et artium inſtituto atque academia. Bonon. 1731-82, 4to.
Acta Soc. regiæ ſcientiarum Upſalienſis. Upſal. 1744-51, in 5 vols. 4to.
Nova Acta regiæ Societ. Upſal. 1773, et ſeq. 4to.
Kongl. Vetenſkaps Academiens nya Handlingar. Stock. 1740, et ſeq. 8vo.
Commentarii Societ. regiæ ſcient. Goettingensis. Goet. 1752, et ſeq. 4to.
Acta Helvetica phyſico-mathematico-botanica. Baſil, 1751, et ſeq. 4to.
Eſſays and Obſervations phyſical and literary publiſhed by a Society at Edinburgh, in 3 vols. 8vo. 1754.
Medical and Philoſophical Commentaries by a Society at Edinburgh. Lond. 1779, et ſeq. 8vo.
Acta Acad. elector. Moguntinæ quæ Erfordæ eſt. Erf. 1757, et ſeq.
Abhandlungen der Naturforſchenden Geſelſchaft in Zurich. Zur. 1761, in 3 vols. 8vo.

Hiſtoria

Hiſtoria et Commentationes Acad. Elect. ſcient. et eleg. litterar. Theodoro Palatinæ. Manh. 1766, et ſeq. 4to.
Schriften der Berliniſchen Geſelſchaft Naturforſchender Freunde. Berl. 1780, et ſeq. 8vo.
Memoires de l' Academie imperiale et royale a Bruxelles, 4to et ſeq. 1777.
Memoirs of the Philoſophical Society at Mancheſter. Warrington 1785, et ſeq. 8vo.

e. Voyages and Travels.

1. *General.*

A collection of Voyages and Travels, by John Harris, in 2 vols. fol. Lond. 1705 and 1715.
Recueil des Voyages faites au Nord. Amſt. 1715.
Hiſtory of Voyages and Diſcoveries in the North, by J. Reinh. Forſter, 4to. Lond. 1786.
A collection of voyages and travels by Churchill. Lond. 1752, in 8 vols. folio and 8vo.
Account of a new voyage round the world, by William Dampier. Lond 1697, 8vo.
Dampier's voyages, in 4 vols. 8vo. Lond. 1729.
A voyage round the world, by George Anſon. Lond. 1748, 4to.
Voyage autour du monde par M. Bougainville, Paris, 1771 4to.
The ſame tranſlated by John Reinhold Forſter. Lond. 1776.
Hawkeſworth's voyages of Cooke, Byron, Wallis and Carteret. Lond. 1773, in 3 vols. 4to.
A journal of a voyage to the South ſea, by Sidney Parkinſon, 1773, 4to.
A voyage round the world, by George Forſter, in 2 vols. 4to.—Lond. 1777.
Obſervations made during a voyage round the world on phyſical geography, natural hiſtory, &c. by J. R. Forſter, 4to. Lond. 1778.
Cooke's ſecond voyage. Lond. 1777, in 2 vols. 4to.
——— Third voyage. Lond. in 3 vols. 4to. 1781.
Voyage fait par ordre du Roi en diverſes parties de l' Europe, de l'Afrique et de l' Amerique par M. M. de Verdun, de Borde, et Pingré'. Paris, 1778, in 2 vols. 4to.
Miſſionary Voyage in the ſhip Duff, by Capt. Wilſon, 4to. Lond. 1799.
Voyage de la Perouſe autour du monde, in 2 vols. 4to. Paris, 1798.
A Voyage round the World, by J. F. G. Perouſe, in 2 vols. 4to. Lond. 1799.
Account of a voyage in ſearch of La Perouſe, tranſlated from the French of M. Labillardiere, in 2 vols. 4to. Lond. 1800.

2. *In Europe.*

Fr. Jos. Torrubia. Aparato para la Hiſtoria Natural Eſpanola. Madrid, 1754, folio.
Pet. Loefflingii Iter Hiſpanicum. Stockholm, 1758, 8vo.
Hiſtoria natural y medica de el principado de Aſturias, que eſcribiò el D. Gaſpar Caſal, ſacra al luz D. Jos. Garcia. Madrid, 1762, 4to.
Introduccion a la hiſtoria natural y a la geografia ſiſica di Eſpana, para Guil. Bowles. Madrid, 1775, 4to.
Travels thro' Portugal and Spain, in 1772, and 1773, by Richard Twiſs. 4to. Lond. 1775.
John Armſtrong, Hiſtory of the iſland of Minorca. Lond. 1752, 8vo.
A Journey to Paris, by Dr Martin Liſter, 8vo. Lond. 1699.
Mémoires pour ſervir a l' hiſtoire nat. des Provinces du Lyonnois, Forez et Beaujolois, par du Lac. Lyon. 1765, in 2 vols. 8vo.
Voyage au Mont Pilat, dans la province du Lyonnois par Tourrette. Avign. 1770, 8vo.
Mémoires pour l' hiſtoire naturelle du Languedoc, par M. Aſtruc. Paris, 1737, 4to.
Hiſtoire naturelle de la province de Languedoc, &c. par Genſanne. Montp. 1776, 8vo.
Deſcription generale et particuliere du Duchè de Bourgogne, par M. Courtepée. Dijon, 1775, 8vo.
Deſcription de la Lorraine et du Barrois, par M. Durival, 1778.
Voyage dans la Provence par M. Papon. Paris. 8vo. 1782.
A Tour thro' Italy, by Tho. Martyn. Lond. 1791. 8vo.
Voyages en Eſpagne et en Italie, par le Pere Labat, Paris, 1730.
Storia naturale de Sardegna, del Abbate Franc. Cetti. Saſs. 1774.
Shiavo, Deſcrittione di varie produzzioni naturali nella Sicilia. Palermo, 1768.
Spallanzani's Travels in the two Sicilies, and ſome parts of the Appennines, in 4 vols. 8vo. Lond. 1798.
Voyage en Sicile et en grand Grece. Lauſanne, 1773.
Brydone's tour thro Sicily and Malta, Lond. 1773, in 2 vols. 8vo.
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CHAPTER I.

OF

ORGANIZED BODIES IN GENERAL.

§ 30.

ORGANIZED Bodies are ſuch as have fluids moving in their ſolids, by ſome internal proper power; they include Plants and Animals.

§ 31.

Every Organized body is generated, lives and dies.

§ 32.

The moſt ſimple ſolid parts of Organized bodies, are called fibres; of theſe are formed a cellular ſubſtance, and veſſels which contain the fluids.

§ 33.

The fluid parts, not only in the veſſels, but in the cellular texture, are moved according to certain laws; ſo that the Organized body may be conſidered as an hydraulic machine, which, as long as there is life, is in conſtant motion.

§ 34.

Life in Organized bodies, appears in three principal effects: 1. they are nouriſhed, or aſſimilate foreign ſubſtances to their own nature; 2. they grow, or are increaſed by the internal addition of new parts; and 3. they generate, or produce new bodies of their own kind.

§ 35.

Plants and Animals receive nouriſhment in a ſimilar manner; but the nutritive organs, as well as the nutritious matters, are very different.

§ 36.

Plants have roots fixed in the earth, by means of the fibres of which, the nutritious juices are brought to the veſſels of the plant, and moved in them in all their parts. Theſe juices conſiſt of an oily ſaline matter, mixed with a ſubtile earth, and ſoluble in water.

§ 37.

Animals convey their food by the mouth to a common receptacle, as the ſtomach and inteſtines, where the fineſt orifices of the veſſels are found: theſe extract the nouriſhing particles, and convey them to other parts, where they are ſo changed by a variety of actions, that they aſſimilate themſelves to the ſubſtance of the animal, and nouriſh it.

§ 38.

This change of the nouriſhing juice happens in conſequence of its mixture with the juices already in the Organized body, and of the action of certain parts of that body upon it.

§ 39.

The elaboration of the juices is promoted by the influence of the air and a certain degree of external warmth. Air is neceſſary to the life of Organized bodies. It is either inhaled and mixed with the juices, by means of the orifices of the veſſels which are diſperſed over the ſurface of the body, as in Plants; or it is received into proper veſſels which are again diſtributed over the whole body, as in Inſects and the Vermes; or particular organs are appropriated for it, as in the other Animals. The air, thus mixed with the juices of organized bodies, loſes ſome of its properties, and becomes unfit for reſpiration.

§ 40

§ 40.

The nouriſhing particles, elaborated in this way, (§36-39) penetrate the cellular texture, unite intimately with the organic parts, and enlarge them in every direction. Thus food effects partly the preſervation, and partly the growth of Organized bodies. But by this conſtant motion of the juices, by the friction of the ſolids on one another, and by other cauſes, many parts are loſt which muſt be repaired.

§ 41.

If more nouriſhing particles are added than are loſt, the body grows. By growth, the fibres of which the ſolid parts of Organized bodies conſiſt are more and more enlarged.

§ 42.

Growth differs according to the different age of Organized bodies, and has its certain bounds at which it ſtops. For when, by continual nouriſhment, the fibres have grown thick and hard, the interſtices at length are ſo filled up, and the fibres become ſo cloſe, that no nouriſhing particles can paſs between them, and conſequently the body ceaſes to grow.

§ 43.

Growth likewiſe differs in Organized bodies in proportion to their ſize and the length of their life. Some Plants live but a year, and ſome a ſhorter time; theſe grow quickly: Some Inſects often grow in a few days to their natural ſize.

§ 44.

At laſt the veſſels (§ 32.) become ſo thick, that the juices cannot force their way through them, but remain thick and unelaborated; their motion grows languid and ſtops; the Organized body ceaſes to live or dies. Some time after death it retains its organic ſtructure; but ſoon the parts begin to ſeparate, they fall down, and take their place in the Mineral Kingdom, from which they were originally formed.

§ 45

§ 45.

While Organized bodies are growing new parts always ſhew themſelves; ſome change their firſt form; others, that formerly lay hid, develope themſelves by degrees. In ſome bodies, as in inſects, this is ſo remarkable as to appear a true metamorphoſis.

§ 46.

The power of Organized bodies, by which they grow and form new parts, ſhews itſelf often by the reproduction of parts that have been loſt. Thus, when the feet or tail of lizards and frogs are cut off, they grow again. Others, whoſe organic ſtructure is leaſt complicated, are capable of repairing the loſs even of their eſſential parts; and from the ſeparated parts of ſome, entire new bodies can be formed.

§ 47.

In Man and the higher animals, and in ſome plants, an intercourſe of male and female is neceſſary to the multiplication of the ſpecies: in the greater part of plants, and in ſome of the lower animals, individuals poſſeſs both male and female organs, and are either ſufficient of themſelves to produce their like, or two individuals mutually impregnate each other.

§ 48.

There are other Organized bodies that generate new bodies of their own ſpecies, without requiring a difference of ſex or any impregnation. The young are produced and often feed themſelves, while ſtill attached to the parent; and when in a condition to live independent, they ſeparate themſelves and become new organized bodies, furniſhed with ſimilar properties to thoſe of their original ſtock. Theſe can be cut into pieces, each piece not only remaining alive, but feeding, and in time acquiring the parts neceſſary to make it a perfect animal. Such bodies are found in the vegetable and even in the animal kingdom; for example, the Polypus, (Hydra), the Naides, and other genera of the Vermes.

§ 49.

§ 49.

When Organized bodies of the ſame ſpecies, whether animal or vegetable, fructify one another, a new body of the ſame ſpecies is generated: but if two bodies of diſtinct ſpecies impregnate each other, there is produced an intermediate or baſtard ſpecies, called a mule or hybrid, which in ſome parts reſembles the male and in others the female parent. Thoſe diſtinct ſpecies which are capable of producing a hybrid, muſt belong to one natural genus. The offspring has little or no generative faculty, the male hybrid appearing to be abſolutely incapable of impregnating, and the produce of the female hybrid returning to the natural ſpecies. In plants the hybrid ſpecies are conſidered by ſome merely as varieties, for in general they are fertile.

§ 50.

Generation is the third effect of life in organized bodies by which a new body is formed. After the formation, this new body continues for ſome time attached to the old, and is nouriſhed by it; when by this means all its parts are developed, it is ſeparated from the old body, and commences a particular life.

§ 51.

The theory of generation forms one of the moſt intricate problems in phyſiology, and has furniſhed philoſophers with an opportunity to diſplay much ingenious but hitherto very uſeleſs ſpeculation.

§ 52.

The antient doctrine of equivocal generation is now univerſally exploded. It was ſuppoſed that Worms and Inſects were produced ſpontaneouſly in the bodies of the larger animals when tending to diſſolution and putrefaction, without being generated by other bodies of the ſame ſpecies; but the moſt ſatisfactory experiments have ſhewn that all organized bodies proceed from an egg.

§ 53.

This egg is either hatched in the body of the mother, where it is nouriſhed for a longer or a ſhorter time before

fore it is excluded, in which caſe the parents are called *viviparous*; or it is excluded from the mother and afterwards hatched, in which caſe the parents are called *oviparous*.

§ 54.

In ſome organized bodies, the ſtructure is exceedingly ſimple, and appears to conſiſt entirely of cellular ſubſtance, and certain ſlender veſſels. In theſe no particular nutritive organs can be diſcovered, but they appear to take in their nouriſhment by the whole ſurface of their bodies. They alſo ſeem to want particular organs of reſpiration and generation. Such in the vegetable kingdom are certain ſpecies of the Mucores, the Confervæ, and Byſſi; and in the animal kingdom moſt of the infuſory animalcula.

CHAP.

CHAPTER II.

OF

THE ANIMAL KINGDOM.

§ 55.

THAT part of Natural Hiſtory which treats of the Animal Kingdom is called ZOOLOGY*.

§ 56.

Zoology is not only the ampleſt and moſt difficult, but the moſt pleaſant and profitable part of Natural Hiſtory. The multiplicity of animals, the differences in their form and properties, their various manners, and the wonderful arts they put in practice for the preſervation of themſelves and of their ſpecies, are ſufficient incentives to the curioſity of a thinking mind. The knowledge of animals, with regard to the benefits derived or injuries to be dreaded from them, is both uſeful and neceſſary. But as their numbers are ſo conſiderable and their abodes ſo various, that in general they elude our ſearch, it is not ſurpriſing that Zoology, notwithſtanding all the induſtry of the Naturaliſt, is leſs complete than could be wiſhed.

* From ζῶον an animal and λόγος a diſcourſe,

of the heart, and force the blood into the arteries; this is called the *Syſtole*: In the arteries, the blood moves thro' all the parts of the body, till it reaches the veins, with the extremities of which the arteries are connected, and by the veins it returns to the heart and fills it; this is called the *Diaſtole cordis*. The whole motion is called the Circulation of the blood; it was firſt diſcovered and demonſtrated by Harvey. This circulation, which is cauſed by the muſcular power of the heart, is aſſiſted by the co-operating force of the arteries, by the valves of the veins, and by the motion of the muſcles.

§ 64.

Moſt animals have a heart, altho' it is variouſly conſtructed in the various orders. In the Mammalia and Birds it has four cavities, of which the two upper ones receive the blood from the veins, and are called Auricles: theſe paſs the blood into the two lower cavities called Ventricles, from whence it is puſhed into the Arteries (Pl. 1. fig. 1.) In the Amphibia (Pl. 1. fig. 2 and 3.) and Fiſhes (Pl. 1, fig. 4.) the heart has but two cavities, one auricle, and one ventricle. Inſects (Pl. 1. fig. 5.) and the Vermes (Pl. 1. fig. 6.) have a heart with one ventricle but no auricle, tho' in many of theſe animals it is otherwiſe formed, and even in ſome it is not yet diſcovered. There are alſo others of the claſs of Vermes (§ 54.) that are endowed with irritability over the whole body, and no heart can be diſtinguiſhed in them.

§ 65.

The Blood in animals is various, according to the various ſtructure of the heart. The Mammalia and Birds have red and warm blood. The Amphibia and Fiſhes have red blood, but it is cold, that is, very little warmer than the atmoſphere. Inſects and the Vermes have a white and cold blood (*ſanies*). Animals with cold blood are always more tenacious of life than thoſe with warm.

§ 66.

With the circulation of the blood, the function of Reſpiration is immediately and neceſſarily connected.

This

This conſiſts in an animal's inhaling the external air by certain organs, and then expelling it again. The organs for this function are of three kinds. The Mammalia, Birds, and moſt of the Amphibia have lungs (*pulmones*,) or certain organs lying in the cavity of the Thorax, which are connected with the blood veſſels, and conſiſt of air veſicles, into which the air paſſes by the Trachea (*arteria aſpera*,) and its branches (*bronchia*.) Fiſhes, and ſome Amphibia, have gills (*branchiae*,) which likewiſe have many blood-veſſels, and undoubtedly too *tracheae*, which ſerve for reſpiration in the water. Inſects and Vermes have ſpiracles (*ſpiracula*,) that extend themſelves over all parts of the body of theſe animals.

§ 67.

The circulation of the blood likewiſe differs according to the different ſtructure of the heart, and the organs of reſpiration. For inſtance, in the Mammalia and Birds, the blood proceeds out of the anterior or right auricle of the heart into the anterior ventricle; out of this, it enters the pulmonary arteries, and by them is diſtributed through the lungs: there it is taken up by the pulmonary veins, and through theſe conveyed to the pulmonary or left auricle, and thence into the poſterior ventricle. This propels it into the great artery (*Aorta*,) by the ramifications of which it is diſtributed to all the other parts of the body, and from theſe again, it paſſes by the veins into the right auricle of the heart.

§ 68.

In animals that are furniſhed with gills, the blood paſſes from the auricle into the ventricle, and thence by the veins into the gills. After it moves through theſe, it does not return again to the heart, but paſſes into a large vein which communicates with all the other parts; from which it is brought back by the veins into the auricle. In Inſects and the Vermes, the circulation proceeds in the way mentioned in § 63.

§ 69.

§ 69.

Animals are forced by the obſtruction of the blood in the organs of reſpiration, to dilate theſe organs for the admiſſion of the air, and immediately after, to expel it by contracting them. For this purpoſe, the thorax is furniſhed with muſcles, by the motion of which that cavity, and the contained organs, are dilated and contracted. This reſpiration is to all animals indiſpenſably neceſſary for life; all of them die in places from which the air is excluded, and in an atmoſphere that is not ſupplied with freſh air. The larger animals, however, can at pleaſure ſuſpend reſpiration for a ſhort time; and the leſſer, that breathe through ſpiracles, can live in a very rarified air, or in a place to all appearance exhauſted.

§ 70.

The neceſſity of the action of the air on the blood of animals has been long known; but the reaſon of it has but lately been ſhewn. Some have maintained that the warmth, conſiſtence, and red colour of the blood, are chiefly generated in the lungs, as there a conſtant and alternate friction of the blood upon the veſſels is kept up. As this is ſmaller in gills, and weakeſt in ſpiracles, the action of theſe upon the blood is not ſo manifeſt.

Others have thought that the blood became colder and thicker in the lungs, where, however, by its motion, it received as much warmth as it had loſt by its communication with the cold air. Others again, aſcribe the heat of the blood to the action of the nervous ſyſtem, which probably depends on the greater or leſs power of the heart. Hewſon maintains, that the particles of the blood, which had formerly been ſaid to be ſpherical, are flatted veſicles; and that they receive their red colour in the lymphatic glands, and in the ſpleen. Others derive the red colour of the blood from the particles of iron contained in the blood; and others from Phlogiſton.

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The doctrine of the preſent day refers the heat and red colour to the operation of oxygen, which the blood abſorbs from the air in its paſſage through the lungs.

§ 71.

But beſides, reſpiration, in animals that have true lungs, is neceſſary for the production of ſound. The principal organ of the voice is the glottis, with its neighbouring parts, which we call the throat. There is a tube compoſed of various cartilaginous rings called the *larynx*, having in its middle the *glottis*, which allows the paſſage of the air by the mouth into the *trachea*. Accordingly, when the air in expiration is forced from the lungs, and preſſed ſo quickly into the mouth through the contracted glottis, that its fibres are made to vibrate and communicate their vibrations to the larynx, ſound is produced. No animals therefore, but ſuch as have lungs, have a true voice.

§ 72.

While the blood moves in the veſſels, part of it is ſeparated and compoſes other fluids. This ſeparation is called ſecretion. It happens, either when the large veſſels are divided into ſmaller, which receive only the more attenuated juices, ſuch as the bilious or aqueous humours; or, when the fluids at the extremities of the veſſels are diffuſed, by their openings, partly into internal cavities, and partly upon the ſurface of the ſkin: ſometimes there are parts particularly appropriated for the purpoſe, called glands *(glandulæ;)* theſe conſiſt of many ſmall veſſels warped together, that often contain a cavity internally, and give out their juices when they are ſtimulated, *(glandulæ folliculoſæ;)* or they are internally compact, and penetrated by the veſſels in numerous complications, *(glandulæ conglobatae;)* or they are compoſed of many ſmall acini or kernels, *(glandulae conglomeratae,)* of which each is furniſhed with a ſmall excretory duct, uniting in a common trunk, through which the juice, ſecreted in the acini, is conveyed to its deſtined place.

§ 73.

§ 73.

The reaſon that in any particular place a particular humour and no other is ſecreted, depends on the various properties of the blood; on the greater or leſs velocity of its motion; on the diſtance of the veſſels from the heart; and on their ſize, direction, and curvature.

§ 74.

The nerves, as the ſenſitive parts of animals, are ſo diſtributed over thoſe parts which actually communicate ſenſations of the preſence of external objects to the mind, that they form certain machines called the *organs of ſenſe*. That the nerves are organs of ſenſation, appears from this, that ſenſations are always moſt acute in thoſe members that are furniſhed with moſt nerves; and that all ſenſation ceaſes when the nerves are deſtroyed. § 61.

§ 75.

The organ of Sight, or the Eye, is a ſpherical body, compoſed of various coats filled with different humours, and in moſt animals is moveable by means of muſcles. The coats cover one another in the following order; the moſt external is the ſclerotis, (*tunica ſclerotica*) of which the anterior part, forming the ſegment of a ſmaller ſphere, is pellucid, and is called the *cornea*. Under the ſclerotis lies the choroid (*tunica choroidea*,) which adheres ſlightly to the former by delicate blood veſſels; but at the cornea it is more firmly attached, whence ariſes the coloured coat called *uvea*, which is plain and very little raiſed; the anterior ſurface of this is called the iris, and in the middle of it is an opening called the pupill (*pupilla*). Behind the choroid coat, lies the *retina*, which is a reticulation of the fineſt nerves and blood-veſſels, that take their riſe from the optic nerve, (*nervus opticus*.) Theſe coats contain what are called the humours, of which only one of them, the aqueous humour, which lies in the anterior chamber behind the cornea, and alſo behind the uvea, is a true fluid. The vitreous humour is ſoft, included in a tranſparent membrane of its own, of a cellular fabric; the intervals of which contain a very clear water. Behind the uvea, in

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an orbicular depreſſion of the vitreous humour, lies the cryſtalline humour or lens, (*lens cryſtallina,*) conſiſting of concentric plates or ſcales connected by cellular fibres. It too, is contained in a pellucid membrane or capſule, and is perhaps kept ſomewhat firm by the ciliary ligaments.

§ 76.

The rays of light that fall perpendicularly on the cornea, proceed in a ſtraight line through the humours without inflection to the retina, and are there painted: but thoſe that fall obliquely on the cornea are inflected by it, and by the aqueous humour, but eſpecially by the cryſtalline lens, and the vitreous humour, from the ſtraight line; they unite in the retina, ſo that the image of the object they proceed from is painted in its proper ſhape and ſituation, inverted however, by reaſon of the unavoidable croſſing of the rays. The motion of the eye, by its muſcles and the dilatation or contraction of the pupil, in proportion to the number of rays, gives the eye the power of viewing at all times objects in their due diſtance.

§ 77.

The image is thus painted on the retina, and not on the choroid coat, as ſome have imagined. The ſituation of the parts in the viſible object is perceived by the mind as they ſtand in nature, not inverted as they are painted on the retina.

§ 78.

The number of eyes in moſt animals is two, but ſome Inſects and Vermes have more. The eyes in the larger animals are protected by various coverings. Thus, the Mammalia, Birds, and many of the Amphibia have eyelids, (*palpebræ,*) and ſome have what is called a *membrana nictitans.*

In the Mammalia only is there an *annulus ciliaris* and blood veſſels in the retina.

The eyes of Fiſhes are often furniſhed with an internal covering, or they are ſufficiently protected by the carti-

lages in which they lie. The ſclerotis in them is nearly cartilaginous. The cryſtalline lens is ſpherical, that they may ſee the better in a medium ſo denſe as water.

The eyes of Inſects and Vermes have no covering, but their cornea is harder, ſo that the Organ has leſs occaſion for protection. On account of their minuteneſs, all the above parts cannot be obſerved in them.

§ 79.

The Organ of Hearing, or the Ear, conſiſts for the moſt part of elaſtic cartilages, or exceedingly hard bones, about which the auditory nerve is interiorly extended. The external ear is contracted at the outward opening, *(meatus auditorius externus)*; at the inner extremity of which lies the *membrana tympani*, by which the cavities in the tympanum are ſeparated from one another. In theſe cavities, lie the four auditory bones, *(officula auditûs)*; the hammer *(malleus)* is attached by its handle to the membrane of the tympanum, the head of it is connected with the anvil, *(incus)*; at the inferior extremity of which laſt there is a ſmall orbicular bone, *(os lenticulare,)* connecting with the ſtirrup *(stapes)*. The baſe of this fills an aperture called the *feneſtra ovalis*, which opens into the interior part of the ear, or the Labyrinth. This conſiſts of a round cavity filled with water, *(veſtibulum)*, of three *canales ſemicirculares* that open into the veſtibulum, and of the *cochlea*, which lies forwards, and conſiſts of a hollow ſpoon-ſhaped ſerpentine paſſage, winding round a bony conical axis, which is ſeparated by a partition called the *lamina ſpiralis*, into two ſemicircular pipes; of theſe, the moſt internal and poſterior begins with the *feneſtra rotunda* incloſed in a membrane, and thereby opens into the cavity of the tympanum; the anterior opens into the veſtibulum. There is, beſides, the euſtachian tube which leads to the mouth. The axis of the cochlea is perforated by innumerable foramina, which open into the *meatus auditorius internus*. By this, the auditory nerve *(nervus acuſticus)*

cuſticus) goes to the cochlea, to the veſtibulum, and from thence to the ſemicircular canals, and is every way extended through them.

§ 80.

When the undulations of the air reach the drum of the ear through the external auditory paſſage, there is excited in it, and in the auditory bones connected with it, a tremulous motion, by which the ſtapes in particular is ſo agitated, that it inclines the poſterior part of its inferior ſurface to the veſtibulum, and the tender ligament, by which it is attached to the feneſtra ovalis, is ſtretched. At the ſame time, the undulating air ſtrikes upon the membrane of the feneſtra rotunda, and at every vibration of the air, the bony ſides of the labyrinth tremble. By this means, the water incloſed in the labyrinth is put in motion, and acts upon the auditory nerve diſperſed over it, exciting the ſenſation of ſound.

§ 81.

In this manner is the Organ of Hearing in the Mammalia conſtructed: even in thoſe of them that live in water, though they want the external ear. Birds, Amphibia and Fiſhes, have no external ear: but all are furniſhed with the Tympanum, auditory bones, and the Labyrinth. Birds have a *meatus auditorius externus:* but the bones of their ear are ſo grown together as to have the appearance of but one bone. Frogs have a cartilaginous tympanum; and, like the other animals of the amphibious claſs, only two auditory bones, that are very variouſly formed. The Lybrinth in ſome, conſiſts but of one canal, and the cochlea is intirely wanting; at leaſt, on account of the minuteneſs of the part, it has not yet been diſcovered.

Fiſhes have the internal auditory organs perfect, although the meatus auditorius externus, and membrane of the tympanum, are with difficulty obſerved. The three auditory bones are connected by delicate ligaments. The ſemicircular canals reſemble thoſe in the

Mammalia, and open into a ſpongy body correſponding to the veſtibulum: inſtead of the cochlea there is found a ſmall ſack with a little bone.

In the Vermes, no auditory organs have yet been obſerved. In ſome Inſects they have lately been demonſtrated.

§ 82.

The Organ of Smell is a cavity, delicately formed of various bones and cartilages, internally covered by a ſpongy membrane, through which the blood-veſſels and olfactory nerve (*nervus olfactorius*) are extended. Theſe parts, and eſpecially the olfactory nerve, are prevented, by an inſipid fluid mucus, from drying and too great irritation.

Smell is excited when the ſubtle volatile ſaline and oily particles continually exhaling from moſt bodies are urged by the powers of reſpiration through the noſe by the noſtrils, and come in contact with the olfactory nerve. By this means we diſtinguiſh the ſeveral kinds of oils and ſalts; and are put on our guard againſt any pernicious, putrefactive, or violently acrimonious ſubſtances.

§ 83.

The form of the external noſe, which is peculiar to the Mammalia, and ſome of the Amphibia, and the form, number and ſituation of the noſtrils in the other larger animals, are very various, and afford very good characters for diſtinguiſhing genera. All animals are endowed with the ſenſe of ſmelling. Thoſe which muſt either ſcent their prey at a diſtance, or which among ſimilar plants, muſt ſelect the ſalutary from the hurtful, have a very acute ſmell, and large olfactory organs. In Inſects and the Vermes theſe organs are not yet perfectly demonſtrated, though they actually ſeem to be endowed with the ſenſe.

§ 84.

The Organ of Taſte lies chiefly in the tongue, and there, only in the upper ſurface and edges. In the firſt four claſſes of Animals this is a fleſhy body furniſhed with

with many nerves. Theſe nerves terminate in the upper ſurface in numerous papillæ, which are properly the organs of taſte. Between theſe certain delicate veſſels ſeparate a fluid (*saliva*) which moiſtens the tongue, mollifies the papillæ, diſſolves ſaline bodies, and mixes with oils. Now when theſe ſaline and oily ſubſtances touch the papillæ, they are immediately perceived; and thus the ideas of ſour, ſweet, auſtere, bitter, ſalt, urinous, ſpirituous, aromatic, pungent, and other taſtes are preſented to the mind.

The papillæ are protected from the too great acrimony of ſaline bodies, by a mucous ſubſtance which forms a perforated net-work, and by the cuticle.

The figure and degree of motion in the tongue are various in various animals. The organ however has not been diſcovered in Inſects and Worms.

§ 85.

The Organs of Touch are in general the ſmall extremities of the nerves, that are diſtributed over the whole ſkin, and thus, as in the tongue, by a cellular texture and veſſels, united into ſmall papillæ, are covered with a mucous net-work (*rete mucoſum*) and with a fine inſenſible upper ſkin or *epidermis*. Theſe papillæ are larger at the points of the fingers, and accordingly there the ſenſe of touch is moſt acute.

When theſe papillæ are a little erected, or applied by gentle friction to the tangible object, we receive the impreſſion of it, that is, we feel it, or we diſtinguiſh the hardneſs, roughneſs, moiſture, warmth, or ſenſible qualities of the body.

§ 86.

Theſe are the Organs of Senſe, but there is great diverſity in their ſtructure in particular ſpecies of animals; and in Inſects and Worms we find particular parts, ſuch as the Antennæ and Palpi, that are probably organs of ſenſation, though the particular ſenſe which they convey to the animal has not yet been diſcovered.

§ 87.

The Nerves have their origin in the Brain, which is a medullary ſubſtance that beſides the common cover of the Skin, Bones or Cartilages (§ 59, 62.) are covered by particular membranes called the *dura mater*, the *arachnoides*, and the *pia mater*; and in the brain (*cerebrum*) the *cerebellum*, the *medulla oblongata* and the *medulla ſpinalis*, are obſervable. The outermoſt part of the brain is very ſoft, of a reddiſh grey colour, and is called the bark (*ſubſtantia corticalis*, *cortex*); the *medulla* is more internal, white, and of a ſomewhat firmer conſiſtence than the bark. The whole Brain receives the fineſt branches of numerous blood-veſſels, which penetrate through the membranes.

The very delicate ſtructure of the brain can hardly be deſcribed without actual inſpection, however the following are the moſt remarkable parts in the brain of the Mammalia. The *corpus calloſum* connects both the lobes of the brain, and covers the ventricles (*ventriculi cerebri*) in which the *plexus choroideus* abſorbs the ſuperabundant juices. Here lie the *corpora ſtriata*, out of which the olfactory nerves iſſue; the *thalami nervorum opticorum*, the *fornix* and the pineal gland, with the four eminences (*tubercula quadrigemina*). By means of theſe parts a junction is effected of the medulla in the brain, which, like that of the cerebellum, the ſtructure of which is more ſimple, ends in what is called the *Pons Varolii*, and thereby joins the ſpinal marrow.

§ 88

In the brain of Birds too we find the junction of the medullary fibres; but it differs from the brain of the Mammalia in the following particulars. The cortex lies almoſt every where internal, the medulla external, and the former is proportionably more abundant than the latter. The corpus calloſum, the pineal gland, and the four eminences are wanting. The thalami of the optic nerves lie ſeparated from the brain

and

and are hollow. The ventricles and the fornix are alſo otherwiſe formed.

In the Amphibia the Brain is variouſly conſtructed in various ſpecies, but it has hitherto been little inveſtigated.

The Brain of Fiſhes conſiſts of ſeveral unconnected ſpherical bodies out of the moſt anterior of which the olfactory, and out of the middlemoſt the optic nerves ariſe. Some have the pineal gland and the four eminences, as Carps; others want them, as Pikes. The thalami of the optic nerves are hollow. Inſtead of the dura mater a cartilaginous covering and a fatty matter inveſt the ſpheres that compoſe the brain.

In Inſects and the Vermes we only find ſphericles connected together by medullary fibres; yet the membranes, the cortex and medulla have been diſcerned.

Thus the Brain in all animals in which it has been diſcovered, ſeems to have this in common that it conſiſts of a cortical and medullary ſubſtance, and that all the nerves take their origin from it.

§ 89.

From the delicate ſtructure and numerous blood veſſels of the brain, it appears probable that it ſeparates from the blood an exceedingly fine fluid, which it communicates to the nerves; this is called the Nervous fluid or Animal ſpirits, (*fluidum nerveum, ſpiritus animales*). Now when an external ſenſible object makes an impreſſion upon the nerves, it is called the external impreſſion, and by this means the nervous fluid is put in motion, and the impreſſion communicated to the medullary part of the brain, and particularly to that part where each nerve has its origin; this operation is denominated the internal impreſſion, and that part of the brain appears to be the true *ſenſorium commune*.

§ 90.

The cauſe of the difference of ſenſation thro' the different organs of ſenſe depends, partly on the difference in the nerves themſelves, and partly on the different ſtructure

ſtructure of the organ, which either weakens or prevents the impreſſion of objects upon the nerves. But in this they all agree that objects by means of the organs of ſenſe, operate a certain change upon the nerves by which their exiſtence is perceived.

§ 91.

The impreſſions of ſenſe, even thoſe of ſeeing and hearing, are preſerved in the brain for a very long time. Hence proceed the imagination and memory of animals. Beſides, the images excited there awaken in the mind either pleaſure or diſguſt, on which depend the emotions and paſſions, which often are the occaſion of great changes on the body. It has been ſaid that animals are endowed with ſagacity in proportion to the ſize of their brain. The ſmall ſinging birds have a brain larger in proportion to their ſize than domeſtic fowls. This obſervation, however, has not been ſufficiently eſtabliſhed.

§ 92.

The nerves are alſo organs of motion, and from them comes the power of muſcular action (§ 61.) When a nerve is ſtimulated, the muſcle in which it terminates is convulſed; when it is compreſſed, tied, or cut, palſy of the muſcle enſues. It is probable that the nervous fluid ſtimulates the muſcular fibres, by reaſon of which irritation theſe laſt contract, and move the other parts.

The action of ſome muſcles depends on the arbitrary will of the animal, others are actuated by an internal power (*vis inſita*). On the firſt depends the motion of particular parts, and even of the whole animal from one place to another; and this is various according to the various ſtructure of the animal body. From the action of the muſcles upon the body, the feet, the wings and other parts, the motions of creeping, walking, running, leaping, flying, ſwimming, &c. are explained. By the vis inſita of the muſcles, the circulation of the blood, reſpiration, the action of the inteſtines and other motions neceſſary to life are effected. The oftener a part is moved

ed, and the greater power of motion it poſſeſſes, the ſtronger are the muſcles with which it is furniſhed.

§ 93.

When an animal is in ſuch a ſtate as to be open to the impreſſions of the external ſenſes, and to be capable of voluntary motion, it is ſaid to be awake. When it is incapable of performing theſe functions, and the parts by which they are performed are at reſt, it is ſaid to be aſleep. But in this laſt ſtate the involuntary motions, ſuch as the action of the heart, of the lungs, and the ſecretion of the juices, continue to go on.

When internal impreſſions, and the powers depending on theſe operate on the mind, dreams are the conſequence; theſe often produce voluntary motions in the body during ſleep. Many of the inferior amimals alſo dream.

Sleep conſiſts either in a privation or obſtruction of the motion of the nervous fluid in the nerves and brain.

§ 94.

Sleep is neceſſary to all animals. All the motions of bodies are thereby ſuſpended, and the evaporation of the fluid parts diminiſhed. The ſecretion of the juices continues, and thus bodies acquire renewed ſtrength.

§ 95.

The time deſtined for ſleep is various in various animals. Moſt of them ſleep during the night. Beaſts of prey ſleep but little, generally in the day time, and they ſeek their food during the night. Many animals ſleep the whole Winter over; but this winter-ſleep is to be conſidered rather as a ſtate of ſtupor and torpidity, than of natural ſleep: for when ſuch animals are brought into a warm place, they wake and ſleep alternately, as at other times. Of this kind, are many Quadrupeds, Birds and Amphibious animals. Moſt Quadrupeds lay themſelves down to ſleep, but ſome ſleep ſtanding. Birds for the moſt part ſleep ſtanding, and maintain themſelves in equilibrium on the weakeſt branches: for the moſt part they ſleep with the head under the wing, and they

are in general very watchful. Serpents wind themſelves in ſleep into a ſpiral form. Of the ſleep of Fiſhes, Inſects and Worms, nothing certain is yet known.

When animals are in a dormant ſtate in Winter, the circulation of the blood goes on, but much more ſlowly; this appears from the lymph of the blood when it cools, not coagulating.

§ 96.

By the circulation of the blood, and the animal motions, certain parts are rendered uſeleſs, which are thrown off from the body by perſpiration, and otherwiſe. (§ 40.)

Hence, by the unpleaſant ſenſations of hunger and thirſt, animals are excited to ſupply this loſs with meat and drink. Some feed on other animals, as beaſts of prey, (*animalia carnivora*); others on vegetables, (*animalia phytiphaga*). From the Mineral Kingdom, animals make uſe of water and ſalt: a very few only, ſuch as the Dew worm, feed on the earth; for, if ſome of the larger animals, ſuch as Birds, ſwallow earth or ſtones, it is not for nouriſhment, but to ſerve for the comminution of their true food. Others only ſuck the fluid parts of their prey, ſuch as ſome wild beaſts, many Inſects and Worms, that live merely on the juices of vegetables.

§ 97.

The food is conveyed by the mouth and the pharynx into the ſtomach (*ventriculus*,) where, by means of its mixture with the juices, and with the air, aſſiſted by the warmth, continual motion, and ſolvent power of the gaſtric juice, it is comminuted and digeſted. In the larger animals, this digeſtion is facilitated by previous maceration or ſolution in other parts.

Moſt of the Mammalia, many Amphibia and Fiſhes, are furniſhed with teeth, by which they maſticate, triturate, and comminute their food, and mix it with ſaliva.

Birds partly break their food with their ſmall bills, or have in the oeſophagus, an enlargement called the crop, (*ingluvies*,) in which it is grinded.

§ 98.

§ 98.

The ſtructure of the ſtomach is very various. In the carnivorous animals of the Mammalia claſs, it is a ſimple membranous bag, furniſhed with a muſcular coat for the purpoſe of contraction.

The moſt part of herbivorous animals have four ſtomachs; the paunch *(rumen, aquaticulus)*; the king's hood *(reticulum)*; the *omaſus*, with many folds, and the rud *(abomaſus)*. Theſe animals have a power of bringing the food back from the rumen into the mouth for its more complete maſtication, and are therefore called ruminating animals, *(ruminantia)*. The oeſophagus communicates with the reticulum, by which means the food enters the latter, and by a lateral opening goes into the rumen. Here the food is moiſtened, and paſſes, when the rumen contracts, into the reticulum, and is thence forced back into the mouth, where it is comminuted and conveyed again into the reticulum, and thence into the omaſus. After this, the food is ſtill further triturated and bruiſed in the abomaſus, where it is principally mixed with the gaſtric juice, and completely digeſted *.

§ 99.

In carnivorous Birds, the ſtomach, as in the Mammalia, is membranous, and the food is digeſted by means of the gaſtric juice. In thoſe that live on plants, and particularly in thoſe that feed on fruits and ſeeds, the ſtomach is thick and furniſhed with ſtrong muſcles; the internal cavity of it is ſmall; and the food in the crop is triturated by the power of the muſcles, and by the ſmall ſtones ſwallowed along with the food, without the aſſiſtance of any ſolvent fluid. Other Birds have before the ſtomach, an *echinus*, conſiſting of many folds, which ſecretes a ſolvent juice, and aſſiſts digeſtion.

* In the paunch of ruminating animals are found the ægagropilæ. Theſe differ from the Bezoar ſtones, which are generated in the ſtomachs of many animals, particularly of Goats, and ſome Amphibia, as the Sturgeon.

The ſtomachs of the Amphibia are membranous, but of various forms.

In Fiſhes, the ſtomach is for the moſt part cylindrical, or long, membranous, and very like the inteſtines: in ſome, ſuch as the Salmon, it is fleſhy, but very different from the fleſhy ſtomachs of Birds.

The ſtomach of Inſects and the Vermes, is generally a membranous inteſtinal tube. A few, ſuch as the Aplyſia, have three ſtomachs, in the ſecond of which are found teeth or prickles.

§ 100.

From the ſtomach, the food proceeds into the inteſtines, and by means of their vermicular motion, by the inteſtinal liquor, the bile, and the pancreatic juice, it is completely digeſted.

The inteſtines are of the ſame ſtructure with the membranous ſtomach, and are faſtened to the meſentery: in this lies the pancreas, in which the *ſuccus pancreaticus* is ſecreted.

The bile, is ſeparated in the liver, and collected in the gall-bladder, where it is retained, till, by the *ductus choledochus*, it is diſcharged into the duodenum. In many Fiſhes, the bile flows into the ſtomach.

§ 101.

In the inteſtines, the chyle is ſecreted from the digeſted food, and taken up by the mouths of the lacteals of the meſentery; from this, it is tranſmitted to the receptacle of the chyle, and thro' the thoracic duct, forced into the ſubclavian vein, where it mixes with the blood. During the circulation of the blood, and by the ſecretion of the juices, (§ 72.) the lymph is prepared in the ſmalleſt veſſels, and adheres to the ſolid parts of the body, which it nouriſhes and enlarges. In this way is the food changed into nouriſhment in the Mammalia, in Birds, Amphibia, and Fiſhes. The chyle of Birds is not white like milk, but tranſparent as lymph, even immediately after digeſtion. Birds have two thoracic but no lymphatic glands, the former terminating in

in the jugular veins. The lacteal veſſels of Fiſhes are accompanied with ſmall lymphatic glands; they have either no valves, or theſe yield eaſily to injected liquors. In Inſects and Worms, lacteals have not hitherto been diſcovered; tho' it is probable they are not altogether wanting.

Such part of the food as is unfit for nouriſhment remains in the inteſtines, and is afterwards diſcharged out of the body by the common paſſage. The ſuperfluous, watery, and ſaline particles of the blood, are ſeparated in the kidneys, and by the ureters conducted into the bladder: In Birds, and the cold-blooded animals, they are conducted into the rectum.

§ 102.

Moſt Animals that are of different Sexes cohabit promiſcuouſly; but others pair, or one male attaches himſelf to one female, as ſome Apes, the Maki (Lemur), the Bat, and many Birds: Sometimes one male engroſſes ſeveral females, as in the Seals.

§ 103.

In moſt Animals, the Egg is impregnated while in the body of the mother; but in Frogs, and perhaps in all Fiſhes, the female firſt lays her eggs, which are afterwards impregnated by the male.

§ 104.

Oviparous Animals, as Birds, many Amphibia, and moſt Fiſhes, Inſects and Vermes, ſhew that the egg exiſted in the mother previous to impregnation. The egg conſiſts of the yolk, (*vitellus*), of the double white (*albumen*), and it is ſurrounded with a ſhell. At firſt, the yolk is a yellow fluid ſubſtance: it is incloſed in a thin medullary film, and is connected by that film, and by other veſſels, with the ovarium. In the yolk, appears a ſmall ſoft circular part called the cicatricula, which is likewiſe preſent before fructification. By this operation, the egg is looſened from the ovarium, and deſcends by degrees into the uterus, where it is ſurrounded by a double white, the outermoſt of which is thin,

and

and the inner one thickeſt, and both exude from the veſſels of the uterus. In the white, likewiſe, are formed two ſacks (*chalazæ*), that conſiſt of a membrane twiſted at the extremities, which maintain the yolk in the middle of the white; yet ſo, that as they ſtretch out from the yolk in an oblique direction with reſpect to the two ends of the egg, and not in the axis of the yolk, the ſmaller half of the yolk in which is the cicatricula, and after fructification likewiſe the germ, may always turn upwards in whatever poſition the egg may be. At laſt a fine membrane ſurrounds the white, and, a ſhort while before excluſion from the mother, becomes the external hard ſhell. This is the ſtructure of a Bird's egg, and is probably that of the eggs of other oviparous animals.

§ 105.

The evolution of the germ in the egg after fructification, is promoted by external heat. In an incubated egg, the germ ſhews itſelf over the medullary membrane of the yolk in an exceedingly fine ſhining membrane (*amnios*). This germ lies over the cicatrice, and is quite different from it. The cicatrice and the whitiſh rings that lie upon it are ſmall veſicles, which probably ſerve partly to promote the floating of the germ, partly during incubation, to preſs into the veſſels of the germ, by the expanſion of the encloſed air, the fineſt particles of the nouriſhing juice. In three days the cicatrice and whitiſh rings diſappear. On the ſecond day, the motion of the heart is ſeen in the germ, and after eight and forty hours, red blood appears in the veſſels, (*figura venoſa*). On the ſixth day, the heart is perfectly formed. By the heat of incubation, the white grows more and more fluid, and is perhaps forced into the yolk, and by it into the veſſels of the chick, by means of the air incloſed between the external hard ſhell and the ſoft membrane of the white. The yolk becomes more fluid, at laſt green, and paſſes into the ſtomach of the chick, and

ſerves

ſerves it for food. When the young animal is fully formed it pierces the ſhell, or this burſts of itſelf, being preſſed by the growth of the chick.

§ 106.

In viviparous animals, the ovarium is found at the ſide of the uterus, in which there are ſmall veſicles (*veſiculæ Graafianæ*) that reſemble the eggs of other animals. At conception, one of theſe ripe veſicles is broken off from the ovarium, and receives from the male ſemen the germ of the future animal. This fructified veſicle or egg falls down thro' the Fallopian tube into the uterus, and attaches itſelf to it, while from the membrane of the egg there ariſe veſſels which connect themſelves with the mouths of the veſſels in the uterus. In a ſhort time the fœtus becomes viſible, and is incloſed in certain membranes, the outer of which is called *allanthois*, the middle one *chorion*, and the inner *amnios*. The veſſels of the egg are ſurrounded by their own proper membrane and form the placenta, the twiſted veſſels of which carry the food to the fœtus, prepared from the blood of the mother, by means of the umbilical vein, and from which alſo the ſuperfluous blood of the fœtus is brought back to the mother by the umbilical arteries. Theſe veſſels are encloſed by a cellular texture and a membrane, and are called the *funiculus umbilicalis*.

The blood contains the nouriſhment of the fœtus, and is brought immediately to the heart by the umbilical vein, and the veins connected with it, from which the other parts receive their blood and likewiſe their organization. The fœtus is not nouriſhed by the mouth; it muſt therefore abſorb ſomething from the fluid contained in the amnios in which it ſwims.

§ 107.

In this way from the germ which at firſt appeared a mere jelly is formed a perfect and in every reſpect an artificially compounded animal. The growth of the fœtus, as well in the egg ſtate as in the uterus, proceeds very rapidly, and is thereby remarkably altered. The blood

which they are excited by rewards and punishments; and they are furniſhed with weapons and means of defence to protect themſelves from their enemies.

§ 112.

The principal operations which animals are deſtined to perform, are the following:

1. To provide for their own ſuſtenance, to guard themſelves againſt danger, and to propagate their ſpecies.

2. To preſerve a certain proportion among the ſubjects of the animal and vegetable kingdoms. While ſome feed on plants, and thereby diminiſh their number; others promote the increaſe of theſe by ſwallowing their ſeeds and diſcharging them again uninjured, and in a ſtate fit for vegetation, as do many Birds and Fiſhes. Others feed on the carcaſes of animals and decayed plants, thereby preventing the corruption of the air, and removing out of the way what might be noxious to the life of animals, or the growth of plants; this is performed by beaſts of prey, Vultures, Sharks, Eels, Beetles, &c.

3. To conduct unorganized matter thro' every ſtage of organization. Many of the infuſory animalcula live merely on water and earth, as does the common Earthworm and others; thus they prepare theſe matters for the larger animals, as inſects and birds, to which in their turn they again ſerve as food.

§ 113.

The ſmaller animals exiſt in greater numbers, and they increaſe more quickly than the larger, to which they are ſubordinate and ſerve for food, that theſe may not be able to diminiſh their numbers too much, or to exterminate them altogether. The larger animals likewiſe attack one another to prevent their own too great increaſe.

§ 114.

As the whole ſurface of the earth is covered with plants, ſo animals are likewiſe univerſally ſpread over it; and their nature is accommodated to their abode.

Some

Some animals are of ſo hardy a frame that they can live in any part of the world. Man in this, as in every thing elſe, excels the other animals. He can endure for a time a heat equal to 240° of Fahrenheit's thermometer, and he can exiſt where the cold ſinks the ſame thermometer to 120° degrees below the freezing point. The dog in this reſpect is next to him, and ſome other animals are alſo found ſpread from one end of the earth to the other.

Some occupy but a particular part of the earth, and are either common to both continents, as the Rein Deer, &c. or to one particular region, as the Elephant, the Marmot, the Camel, &c. Theſe are leſs pliant, and leſs hardy.

A great number are confined to a ſmall zone of the earth, and cannot accommodate themſelves to a change in their place of abode. Such are Lions, Parrots, the Bird of Paradiſe, &c.

Many animals migrate at certain ſeaſons from one region to another.

Thoſe animals that are moſt univerſally ſpread, are the moſt uſeful to man; and the moſt dangerous beaſts of prey are confined within narrow limits.

Animals that live in warm climates are nearly naked; thoſe that inhabit the colder regions are covered with hair, and the colder their place of abode is, the warmer is their covering.

§ 115.

Every animal has received from nature, that ſtructure of body, and thoſe faculties which are neceſſary for the functions it is deſtined to perform. Beaſts that prey on others are ſubtile, active, bold, and watchful, and formed for taking their prey either by ſtrength or cunning. Birds have a light body fit for flying: they lay eggs, that their flight may not be impeded by carrying their young in the uterus. Every animal likewiſe has its own peculiar nature and properties which it never abandons,

though man has, by domeſtication, made great changes in ſome animals.

§ 116.

Every animal is provided with certain properties and powers, by which it defends itſelf againſt the attacks of its enemies. Some have weapons of various kinds; as teeth, claws, horns, ſpines, &c.: others have a ſtrong covering ſuch as ſhells, ſcales, &c. Some build very artificial habitations, ſuch as thoſe of the Beaver, the Fox, and the neſts of many Birds; others diffuſe a very unpleaſant odour, as the Viverra Putorius, the Buceros Rhinoceros, &c. or they are entirely free from any kind of effluvia, that their enemies may not be able to trace them by the ſenſe of ſmell. Others eſcape their foes by ſpeed, or by various actions which their purſuers cannot imitate; others conceal themſelves by the reſemblance of their colours to thoſe of the places of their retreat. Some ſpecies of animals appoint a kind of centinels, who give notice by a cry of the approach of an enemy: wild Horſes, and ſome Apes have ſuch centinels. Turkey cocks, and domeſtic poultry by a cry inform their young and other Birds of the appearance of a Hawk.

Thus, beaſts that feed on others muſt employ various means either by force or cunning to get their prey into their power: if theſe means are not ſufficient, they muſt ſometimes ſuffer the want of adequate nouriſhment, and accordingly, they are endowed with a power of ſuſtaining hunger for a long time without injury.

§ 117.

To theſe actions, animals are excited by pleaſure, by hunger, and thirſt: and they are rewarded by the gratification of their deſires: but if they remit their labours, they ſuffer the pain conſequent on their neglect. Thus, all the natural inſtincts of animals may be deduced from pleaſant or unpleaſant ſenſations, and from the powers that depend on the external ſenſes. (§ 91.)

§ 118.

§ 118.

From theſe conſiderations, it is apparent, that mutual advantages are derived to animals from plants, and to plants from animals; and that no ſpecies of animals are either uſeleſs or ſuperfluous; but that all are either mediately or immediately uſeful to man. To him, as their over Lord, all animals are ſubordinate, and, by the exerciſe of reaſon, he is capable of taming the wildeſt and the ſtrongeſt of them, and of turning them all to his uſe.

§ 119.

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§ 120.

From what has already been ſaid with reſpect to animals in general, it appears that many of them agree in ſeveral principal properties, and that therefore the Animal Kingdom may be divided into certain claſſes.

The antients divided animals into ſix claſſes. 1. Quadrupeds, including not only viviparous, but oviparous kinds, ſuch as Frogs, Lizards, &c. 2. Fiſhes. 3. Aquatic animals without blood. 4. Birds. 5. Inſects. 6. Serpents.

But as this diviſion places together animals that are very unlike, and ſeparates others that very much reſemble one another, Linnæus has improved it by 1. uniting in one claſs the Cetaceous with the viviparous animals. 2. placing the oviparous four-footed animals next the cartilaginous Fiſhes, as they are called, along with the Serpents in one claſs, under the name of Amphibia. 3. by including ſome animals that had hitherto been called Inſects, and the bloodleſs aquatic animals in the claſs of the Vermes, and 4. by bringing other bloodleſs aquatic animals to the claſs of Inſects.

Thus,

Thus Linnæus has likewiſe divided animals into ſix claſſes, and has taken the following properties as claſſical characters.

Div. I. *A heart with two auricles and two ventricles; warm and red blood.*

Class I. Viviparous animals, or ſuch as ſuckle their young, called — MAMMALIA.
—— II. Oviparous animals, Birds, or — AVES.

Div. II. *A heart with one auricle and one ventricle; cold and red blood.*

Class III. Animals breathing arbitrarily thro' Lungs; — AMPHIBIA.
—— IV. Animals with gills, Fiſhes. — PISCES.

Div. III. *A heart with one ventricle, no auricle; white and cold blood.*

Class V. With Antennæ, and ſuffering transformations. Inſects. — INSECTA.
—— VI. With Tentacula, and undergoing no change. Worms. — VERMES.

§ 121.

The number of the ſpecies of animals greatly exceeds that of plants, for more than two ſpecies of animals feed on one plant. Some Naturaliſts conſider the probable number of different animals to be about 25,000. Others think it probable, that 5,400,000 animals ſubſiſt on the ſea together.

w to take a view of the above different ; the firſt of which contains the moſt mportant, with regard to man at leaſt, al creation.

CHAP.

CHAPTER III.

OF

THE ANIMAL KINGDOM.

CLASS I. MAMMALIA.

§ 122.

ALL animals of this Claſs have a heart with two auricles and two ventricles; they have red and warm blood, they breathe thro' lungs; they are viviparous; they ſuckle their young with milk from their breaſts or mammæ, and hence have their name.

They likewiſe have all true bones; their ſkin is in general hard; they have all the organs of ſenſe deſcribed above; they have lips and jaws which move perpendicularly, and in general they walk on four feet.

§ 123.

The hair with which their bodies are covered, ſprings from the cellular texture below the ſkin, out of a membranous vaſcular knob. It always grows, but generally once and ſometimes twice a year, it falls off and is renewed. In old age it grows dry and thin. Between the long hairs, in moſt animals, lies a ſhort wool that is ſpread over the whole body and riſes immediately out of the ſkin.

The colour of the hair is various. In wild animals it preſerves its colour, and beaſts of the ſame ſpecies are generally marked in the ſame way; in domeſticated

The hair of ſome animals, as of Cats, the Shrew-mouſe, the Lepus puſillus, Rats, &c. gives out electric ſparks.

§ 124.

Inſtead of hair, the Porcupine and Hedgehog have their bodies covered with quills, the Manis has ſcales, the Daſypus a horny coat. Yet there are ſome hairs between theſe coverings, and in ſome the under ſide of the body is quite hairy.

§ 125.

At the larynx of theſe animals there is a particular cartilage called the epiglottis, which is preſſed down by the food in its way to the oeſophagus, and thus prevents it from entering the windpipe to obſtruct the breath.

The voice of theſe animals is very different; in general it is a ſimple cry by which they ſometimes expreſs their paſſions at other times their wants. Some appear to be dumb, at leaſt we hear no ſound eſcape them. Hares only cry when they are hard preſſed or wounded. The Rein-deer and the Oran-Outang (*Simia Satyrus*) have an enlargement of the throat for encreaſing the voice.

The external covering in moſt animals is very thick at the neck; in ſome as in Oxen &c, it hangs down, and this Linnæus calls *paleæria laxa*.

§ 126.

The eyes of theſe animals are for the moſt part covered with moveable eyelids, which at their outer margins are furniſhed with eye-laſhes (*cilia*), as in Man, the Ape, and the Elephant; in moſt of the other animals the upper eyelid alone is furniſhed with theſe cilia. Above the eyes there are often eyebrows. An internal covering of the eye (*membrana nictitans*) is found in ſome Apes, the Bear, the Badger, &c.

The opening of the pupil is in moſt of theſe animals circular: but in thoſe which ſee by night it is long; either perpendicular, as in Cats, Hares, &c. or tranſverſe as in Oxen, &c. That opening contracts during the

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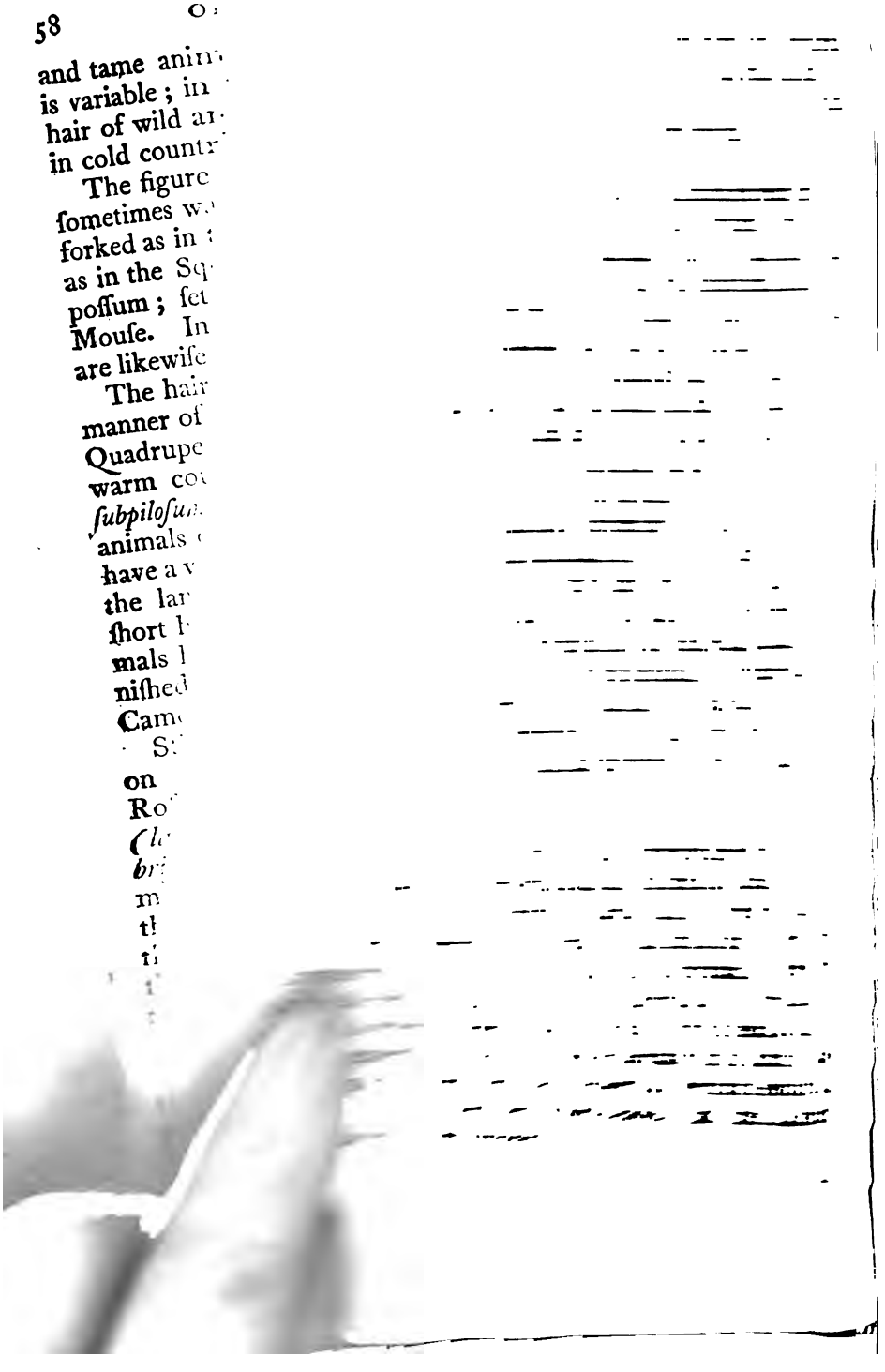

In ſome animals the noſe is produced into a moveable proboſcis or roſtrum; ſhort as in the Hog and Viverra naſua and Narica; longer as in the great Ant-eater, (Myrmecophaga jubata, the Sorex moſchatus, the Talpa, &c. and very long as in the Elephant. Some Bats have on the noſe a membranous appendage (*naſus foliatus*) of various appearance; ſometimes funnel-ſhaped, (*infundibuliformis*), heart ſhaped, (*cordatus*), or ſpear-ſhaped, (*haſtatus*).

The noſtrils are always double; ſometimes round, ſometimes long, as in the Seal; ſometimes moon-ſhaped, (*lunatæ*) as in the Didelphys; ſometimes cleft, as in the Viverra Cynomolgos; ſometimes prominent as in the Lepus; and in ſome furniſhed with a membranous creſt, (*criſtatæ*), as in the Hedge-hog, and Sorex criſtatus.

Beaſts of prey have the ſenſe of ſmell particularly acute.

§ 129.

The tongue is broad in moſt of the animals of this claſs; in ſome it is ſlender and almoſt of equal breadth, (*filiformis*). The Manis and Ant eaters, can thruſt it far out of the mouth, (*extenſilis*), and draw it in again (*retractilis*).

In the Viverra naſua, the tongue is divided into portions, (*lobata*). The ſkin on the upper part of the tongue, is in many animals that feed on vegetables, covered with hard tubercles, and is rough, in ſome it is aculeated, and the aculei point backwards, as in the ſpecies of the genera Felis and Viverra. Seals have a cleft tongue, (*fiſſa*).

Beſides that the tongue is the organ of taſte, it is uſeful to the animals of this claſs in various other reſpects; for inſtance, to clean themſelves and their young, and when they are wounded, to anoint the wound with ſaliva, &c. Animals that live on vegetables excel the others in the delicacy of their taſte.

§ 130

§ 130.

Moſt of theſe animals walk on four feet, of which the fore ones are commonly connected with the body by the ſhoulder-blade *(ſcapula)*, and are compoſed of the *brachium*, the arm from the ſhoulder to the elbow; the *antibrachium*, from the elbow to the wriſt; and the *palma*, the hand, which again is compoſed of a number of bones and articulations. The hind-leg conſiſts of the *femur*, the thigh; the *crus*, the leg, which has two bones, the *tibia* and the *fibula*; and the foot, *(planta)*.

The feet are ſo proportioned, that the fore-feet are generally ſhorter and weaker than the hind feet, which, particularly in the ſwift animals, and thoſe that leap, are conſiderably longer; as in Hares. Some have the hind-feet ſo long, that they uſe them only in leaping, without touching the ground with their very ſhort fore-feet; as the Mus Jaculus, Sagitta, Didelphys Kanguroo, &c. In the Giraffe, (Cervus Camelopardalis), the fore-feet are more than twice the length of the hind-feet.

§ 131.

The extremities of the feet are in moſt animals divided into toes or fingers. The number of toes is different; they are in general five; in ſome, there are four toes on the fore-feet, and five on the hind-feet, as in the Marmot; in others, five on the fore-feet, and four on the hind-feet, as in the Hare. Three toes are not ſo common: the Bradypus tridactylus, and the Myrmecophaga tridactyla, have three toes on the fore-feet. The Bradypus didactylus, and the Myrmecophaga didactyla, have but two toes.

On the toes are ſometimes broad nails, *(ungues)*, as in the Apes and the Maki; or pointed claws, *(unguiculæ)*, that in ſome are particularly large, as in the Daſypus: in the genus Felis, they are retractile; they ſerve the animals partly for climbing, and partly as defenſive weapons.

Sometimes the toes are ſeparated *(fiſſi)*, or connected together by a thin membrane, *(pedes palmati)*; (Plate II. Fig.

Fig. 8.) these serve sometimes for swimming, and are then called *pedes natatorii*; as in the Beaver and Otter; sometimes for flying, as in the Bats, where the four connected toes are very long, and the fore-feet are connected with the hind-feet by the membrane. In the Lemur volans, and the flying Squirrel, the fore-feet are likewise connected with the hind-feet by a skin; but the feet themselves are separate; the last animal cannot fly aloft, but it can make, when it is once raised, very long flights or leaps.

When the innermost toe or thumb is at a distance from the rest, it gets the name of hand, (*manus*); as in the Simia Maimon, &c. The Lemur and Didelphys, have hands on all the four feet, and thus are fitted for climbing. Some have proportionably strong feet and large toes, that serve them particularly for digging in the earth, (*pedes fossorii*), as the Mole, &c.

The Elephant, the Rhinoceros, and the Hippopotamus, have feet that can hardly be called fissi, and therefore make the link that connects the animals with toes, and those with hoofs.

§ 132.

Other animals have feet which end in two hoofs, that are stronger than nails, and horny. These hoofs are commonly deeply divided, (*pedes bisulci*), or not quite divided (*sub-bisulci*), in the Camel and Dromedary: or they are undivided and form a solid hoof, (*solidungula*), as in the Horse. Higher than the hoofs, on the back part of the foot, lie the false hoofs, (*tali succenturiati, ungulæ spuriæ*), which are useful to these animals in running and climbing.

Most animals of this class go on four feet, and upon the points of these feet; (Pl. II. Fig. 9.) but a few on the sole of the foot to the heel, as the Bear, the Viverræ, Apes, &c. (Pl. II. Fig. 10.)

§ 133.

In the water animals of this class, the feet are very short; and, from the situation of their hind-feet, their destination

tination to live in the water is apparent. Seals have the pedes palmati, of which, the fore feet turn downwards and ſerve as oars, but the hind-feet ſtand out at the end of the body and ſerve as a rudder; and in the Sea-Lion, are divided into lobes. They have all, however, diſtinct toes with pointed nails, which aſſiſt them in climbing on rocks or on ice.

In the cetaceous animals, the fore-feet are very ſhort, and quite covered with the ſkin, ſo that no fingers or toes are viſible, and accordingly they appear like the fins of Fiſhes. The hind-feet are united behind in a horizontal tail; but it is evident, by diſſection, that the bones of the feet are really there, and only incloſed in fleſh and ſkin.

§ 134.

The teeth, (*dentes*), with which theſe animals macerate their food, are inſerted into two jaws, (*maxillae*), lying over each other, of which the under one only is moveable, and by the power of particular muſcles approaches the upper. The teeth exhibit ſingular bones; the upper external part of which is hard, thick, and glaſſy, but the under part, or root, is faſtened in a cavity of the jaw, and contains blood-veſſels and nerves. According to their ſituation, they are divided into fore-teeth, (*primores*); canine-teeth, eye-teeth, or dog-teeth, (*laniarii, canini*); and back teeth, or grinders, (*molares*). In number and figure they are very different; and as from theſe, the various food of the animal is known, the principal generic characters have been taken from them.

The fore teeth are called cutting-teeth, (*inciſores*), when they have a broad and acute edge, as in Apes; they are ſharp pointed in the Lemur, and moſt beaſts of prey; lobated as in Dogs; rounded at the apex, as in the Didelphys; ſpoon-ſhaped, (*ſpatulati*), in many of the ruminating animals; obliquely truncated, as in the Beaver; wedge-ſhaped, as in the upper teeth of the Squirrel; compreſſed as in the under teeth of the Squirrel;

rel; ſubulated as in the Glires; cleft, as in the Lemur volans, and Cavia capenſis; obtuſe, as in the Horſe.

The eye-teeth, or canine-teeth, are commonly pointed, a little bent, and often longer than the other teeth: for the moſt part they ſtand ſingle on each ſide, between the fore and back teeth. In ſome beaſts of prey, there are more than one on each ſide, the foremoſt of which are generally the longeſt. In the Hedge-hog, the under canine-teeth lye forewards, (*recumbentes*); in the Elephant, Walrus, and Moſchus, the upper ones ſtand out (*exſerti*); in the Sus Babiruſſa, they ſtand up, and are bent like horns.

The back-teeth are generally obtuſe: in ſome hollowed in the middle; in carnivorous animals, denticulated; in Seals, furniſhed with three ſharp points, (*tricuſpidati*); in the graminivorous animals, ſmooth, but generally raiſed on the ſides.

In the Ant-eaters, and Manis, there are no teeth, (*maxillæ edentulæ*); in other animals ſometimes the fore-teeth, ſometimes the canine-teeth are wanting.

The teeth appear in ſome ſooner, in others later after birth; and the firſt ſet in moſt animals, perhaps in all, at a certain age are diſpoſſeſſed and ſupplied by a new ſet.

§ 135.

The lips (*labia*), cover the maxillæ and the teeth, and by the motion of their muſcles, the mouth is opened and ſhut. In the Glires, the Simia Midas, and the Camel, the upper lip is cleft, (*labium fiſſum*); in others, it has for the moſt part a hollow, (*labium lacunoſum*). In ſome, the lips are pendulous, as in the Veſpertilio Moloſſus, and the Canis Moloſſus. The Simia Cynamolgos, the Mus Cricetus, &c. have a ſort of purſe or pouch in their cheeks, in which theſe animals, for ſome time, preſerve their food.

§ 136.

At the extremity of the back, is the tail; this is in moſt animals, like the reſt of the body, covered with hair. In ſome of the Glires it is bare, (*nuda*); in the

Beaver, the Opoſſum, and ſome of the Glires, it is covered with ſcales, and ſometimes with thin hair, (*ſubpiloſa*). In the Armadillo, it is compoſed of horny rings.

The hairs are ſometimes long, (*comoſa*), as in the large Ant-eaters and Horſes; ſometimes they are ſhort and lie thick, the tail ending in a tuft of longer hair, as in the Elephant, the Lion, &c. or the hair ſtands in two rows as in the Squirrel, (*diſticha*). The tail is likewiſe ſometimes comparatively ſhort, (*abbreviata*), as in the Baboons, the Hare, &c. and ſometimes truncated, as in the Simia Sphinx, &c.; ſometimes long (*elongata*), and uſed for holding and other actions, (*prehenſilis*), and then the under ſide at the end of the tail is generally flat and without hair, as in the Simia Paniſcus, many of the long tailed Apes, and in the ſmall Ant-eaters, (Pl. II. Fig. 5.) The tail is ſtraight in the Fox; bent upwards in the Dog; downwards in the Wolf; and backwards in the generality of Squirrels. Some animals have no tail, as ſome Apes, Bats, the Lemur tardigradus, the Bradypus Didactylus, the Guinea Pig, &c.

§ 137.

The breaſts, or dugs (*mammae*) of theſe animals, in which the milk is ſecreted from the blood, are furniſhed with teats or nipples, which the young ſuck. The dugs are in pairs, either at the breaſt (*mammæ pectorales*); or on the belly, (*abdominales*); or between the hind-feet, (*inguinales*). In general, their number is equal to the number of young which are commonly brought forth at a time. In the females they always exiſt; in the males likewiſe; but in theſe, however, they are always ſmaller; ſometimes fewer in number, as in the dog; in ſome they are wanting, as in the Mus Cricetus, the Horſe, &c.

The females of moſt of the Opoſſums have their teats covered by a membranous bag, in which they preſerve their young for ſome time after birth.

Moſt

Moſt of the old animals of this claſs protect their young for a certain time, ſeek out ſafe retreats for them in concealed places, and ſome make particular neſts for them, as the Squirrels, the Didelphis marſupialis, the Hedge hog, &c.

§ 138.

The claws and teeth ſerve theſe animals likewiſe inſtead of weapons; and thoſe whoſe claws and teeth are blunt, have horns upon the head. Theſe are either hollow as in Oxen, or ſolid as in the Deer, &c. They remain either always (*perennia*), as in Goats, Antelopes, &c. or they they are ſhed yearly, (*annua*), as in the Deer kind. They are likewiſe either ſimple, as in Oxen, Goats,&c. or branched, as in the Stag, &c. They differ too in their curvature, direction, and figure. Some Antelopes have them ſtraight, (*recta*); others bent at the points, (*uncinata*); the Ovis Ammon has them arched, (*arcuata*). Oxen and Sheep have them lunated. Some Antelopes, and the Ovis ſtrepſiceros, have them in a ſpiral form. The Antilope Tragocamelus has them bent forwards, (*reduncа*); the Capra mambrica lying backwards, (*reclinata*). On the ſurface they are ſometimes ſmooth, as in Oxen; knotted, as in the Capra Ibex; carinated, as in the Capra Aegagrus; ſometimes they have raiſed rings, (*annulata*), as in the Gazelles. Sometimes they are round, (*teretia*), as in the Stag; compreſſed, as in the Fallow-deer; or triangular, as in the Capra depreſſa. The horns of the Elk have no principal ſtem, (*acaulia*); in the Rein-deer, and Fallow-deer, they are palmated at the ends; in the Roebuck, they end in two points, (*bifida*); and in the Cervus pygargus, in three (*trifurca*).

In all the above-mentioned animals, the horns ſpring from the fore-head: but in the Rhinoceros, there are two horns which ſtand upon the ſnout, the one behind the other; they are thick, unbranched, and nearly conical.

The females often want the horns altogether, as in the Deer kind, Antelopes, and ſometimes Sheep; in Goats, they are ſmaller than in the males.

§ 139.

The period of life of theſe animals is various; their natural age, which in ſome is very conſiderable, as in Elephants, Deer, &c. is with difficulty aſcertained, becauſe their conſtitution is impaired by a change of circumſtances, and by oppreſſion when they are in the power of man. The loſs of their teeth, their diminiſhed digeſtion and ſcanty food in conſequence, are natural cauſes of the abridgment of their lives.

Their uſe in the economy of nature has been mentioned above (§ 112.) To man they are almoſt all uſeful in various ways; they are often likewiſe hurtful to him. The moſt dangerous are mad animals, whoſe bite alone is poiſonous. They inhabit every where; ſome, as Squirrels, and the flying animals of this claſs, live moſtly upon trees, or in buſhes; the greateſt number live on the ſurface of the earth; but ſome make ſubterraneous abodes, as the Fox, the Badger, the Rabbit, &c. Seals live moſtly in the Sea, though they ſometimes come upon land; the cetaceous animals live entirely in the Sea. Some of the Glires make periodical migrations from one country to another. Moſt of them perform their operations by day; but ſome carnivorous animals ſeek their prey by night. The ſmaller animals likewiſe through fear lie in their holes by day, as Mice, Hares, &c.

§ 140.

Beſides the Books mentioned above on the Animal Kingdom in general, (page 53), the following, on the Mammalia, may be conſulted.

Jo. Raii, Synopſis animalium quadrupedum et ſerpentini generis, 8vo. Lond. 1694.

Jac. Theod. Klein, Quadrupedum diſpoſitio, breviſque Hiſtoria Naturalis. Lips. 1751, 4to.

A Synopſis of Quadrupeds by Thomas Pennant, 8vo. Lond. 1771.

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§ 141.

According to the ſyſtem of Linnæus, this Claſs is divided into ſeven Orders, the characters of which are taken from the varieties of the fore-teeth.

* *With true feet.*

Order I.	PRIMATES.	Four cutting or fore-teeth in the upper jaw.
Order II.	BRUTA.	No fore teeth.
Order III.	FERÆ.	Six fore-teeth (for the moſt part).
Order IV.	GLIRES.	Two fore-teeth, both in the upper and under jaw.
Order V.	PECORA.	No fore-teeth in the upper jaw.
Order VI.	BELLUÆ.	Six obtuſe fore-teeth in the upper jaw.

* * *With feet like fins formed for ſwimming.*

Order VII.	CETÆ.	Teeth various in the different genera.

§ 142.

The generic characters are taken chiefly from the various ſtructure of the teeth, but other eſſential properties are likewiſe uſed when the manner of life is taken into account. By the figure and ſtructure of the parts the

the ſpecies are determined. But in diſtinguiſhing theſe, ſuch characters are chiefly adopted as are obvious to the eye.

§ 143.

ORDER I. PRIMATES.

THE characters of the firſt Order, *Primates*, are; Four cutting teeth in the upper jaw, which are parallel; canine teeth ſtanding ſingle, and obtuſe grinders. From two to four mammæ. The two forefeet are hands, (§ 131.) with divided toes or fingers, which are generally furniſhed with broad nails. Their food is fruits and roots; they climb trees and have ſharp and ſtrong cutting teeth. Their body is covered with ſoft hair. Between the forefeet, they have clavicles. They pair, and the female brings from one to two young at a birth. Their natural abodes are the warmer regions of the globe.

There are four genera. Homo, Simia, Lemur, and Veſpertilio.

GEN. I. HOMO, *Man.* Fore teeth in each jaw, 4, cloſe; canine teeth ſtanding ſolitary between the fore teeth and grinders; grinders on each ſide 5, both above and below, broad, excavated, and rounded on the ſides.

Homo *ſapiens*, know thyſelf.

Man, though indiſputably lord of the inferior creation, has but few traces of inſtinct; of that kind of inſtinct, which many animals poſſeſs, that without inſtruction, without reflection, from mere internal impulſe, they conſtruct neſts, or ſpread ſnares for their prey, he is entirely deſtitute. The Creator has indemnified him for theſe privations by the uſe of reaſon, which to him is invaluable, and falls to the lot of no other animal; by this he fulfils his higheſt deſtinations;

HOMO.

tions; he can ſatisfy his endleſs neceſſities as if he united all the arts of many animals in himſelf. A direct conſequence of reaſon, and therefore another attribute of humanity, is the faculty of ſpeech, which is not to be conſidered in the ſame light as the voice of animals. Man, too, has a voice, independent of articulation, eloquent and expreſſive, as is evident in thoſe unhappy examples of perſons brought up in deſerts, or in children born deaf; in the involuntary tones of ſorrow from an afflicted heart, in terror and in other violent paſſions. Speech is attained as reaſon unfolds itſelf, for then the ſoul urges the tongue to declare the ideas it has acquired. There is no inſtance of a people on our earth either deſtitute of language or of reaſon; and we have now the vocabularies of the Eſkimaux, of the Hottentots and other nations, to whom the credulity of antient travellers denied the uſe of ſpeech. To the corporeal advantages of man belong chiefly his upright gait and the uſe of two hands, by which he is peculiarly diſtinguiſhed from thoſe apes that otherwiſe moſt reſemble him. The ridiculous aſſertion of ſome philoſophers that man was originally made to walk on four feet, could never have been advanced by any one acquainted with comparative anatomy. The broad ſole of the foot is made for walking, and the hand for catching and holding. Apes, on the contrary, have four hands; that is, they have no great toe, but on the hind feet, as on the fore feet, they have a ſort of thumb, by which they lay hold of objects as with the fore feet; and that our feet have not loſt the ſtructure and faculties of hands by the uſe of ſhoes, as ſome philoſophers have maintained, is evident from the feet of thoſe nations who never wear ſhoes, and from thoſe of infants.

Man is in himſelf a defenceleſs, helpleſs creature. No other animal is ſo deſtitute of inſtinct, no other remains ſo long in a ſtate of infancy, none are ſo long in attaining their prime. Even his great advantages, reaſon and ſpeech, are but germs, which do not ſpring of themſelves, but are evolved by foreign aid, by culture and education. Theſe natural imperfections on one ſide, and his manifold wants on the other, make man a ſociable animal; and Hobbes conſiders neceſſity as the ſole motive by which men, like bees and ants, are forced into a ſtate of ſociety.

The abodes and the food of man are both unlimited. He inhabits the whole earth, and feeds on almoſt the whole organiz-

HOMO.

ganized creation. He attains, in reſpect of his moderate ſize, and in compariſon with other animals, a very great age, which indemnifies him for his tedious childhood. The proportion in the number of males and females, the pernicious conſequences of polygamy, &c. prove that the natural deſtination of man is for monogamy.

All men belong but to one ſpecies; and the men of all times, of all generations, and of every climate, are deſcended from the ſame original ſtock. The differences in figure and colour in the human frame, are the effects of climate, of food, of the manner of life, &c.; for man has no excluſive privilege of being exempt from variation by the agency of external circumſtances, to which every other organized body is ſubject. Thus the heat of the ſun blackens the Moor and turns his hair into a curled wool: ſo likewiſe the cold of the northern zone effects the white colour and ſmall ſtature of its inhabitants. All theſe differences run ſo much into one another that there is properly no diſtinct limits between them; we may, however, include the whole human race in the following five varieties:

1. The original and moſt numerous race comprehends all the Europeans, not excepting the Laplander, whoſe figure and language betrays his deſcent from the inhabitants about the Gulf of Finland, and he has no marks that ſhould diſtinguiſh him as a particular variety; likewiſe the inhabitants of Aſia that live on this ſide of the Obi, of the Caſpian Sea, of Mount Imaus, and of the Ganges; alſo the northern Africans; and, laſtly, the Greenlanders and Eſkimaux, who are almoſt wholly different from the other Americans, and probably alſo are of Finlandiſh deſcent. All theſe people are generally of a fair colour, and according to our ideas of beauty the beſt formed men.

2. The other Aſiatics on the further ſide of the Obi, Ganges, &c. Theſe for the moſt part are of a yellowiſh brown colour; their hair thin, they have flat faces and ſmall eyes.

3. The remaining Africans; they are of a black colour, with woolly hair, flat noſes, and thick lips.

4. The remaining Americans; of a dark copper colour.

5. The South Sea iſlanders; among whom may be reckoned the inhabitants of the Sunda, Molucca, and Philippine iſlands, &c. They are for the moſt part of a dark brown colour, with broad noſes, and ſtrong ſtraight hair.

The

HOMO.

The Patagonian giants ſince the time of Magalhaens have dwindled down from 12 feet high to 6 or 6½. The Albinos or white Moors are perſons afflicted with a diſeaſe, to which men in every climate, and even other animals are expoſed.

GEN. II. SIMIA, *Ape*. Fore teeth in each jaw, 4, ſtanding cloſe. Canine teeth ſolitary, longer than the fore teeth, cloſe to the grinders in the upper jaw, and to the fore teeth in the under. The grinders obtuſe. Four hands.

Apes of all animals have the neareſt reſemblance to man in the figure of the body and in the ſtructure of its parts. The face is in general ſmooth. Both eyelids are furniſhed with cilliæ; the external ear is exceedingly like the human. But they differ from him ſufficiently in their prominent faces and long muzzles; in the particular bones in which the fore teeth are inſerted, and in their lips, which are thin and turned inwards. Some of them have the *buccæ ſaccatæ*, or a ſort of pouch in the cheeks for holding their food; and many have likewiſe callofities on their buttocks.

All apes are natives of the country between the tropics. They go in troops; they feed chiefly on fruits and grain; ſome of them however on animal matters. Their natural drink is water. The females of many apes are ſubject to a menſtrual diſcharge.

This genus is divided into four ſections, viz.

1. Apes without a tail, or *Apes* properly ſo called.
2. Apes with a ſhort tail, or *Baboons*.
3. Apes with a long tail, or *Monkeys*.
4. Apes with a prehenſile tail, or *Sapajous*.

1. Simia *Satyrus*, The Oran Outang. Of a reddiſh brown colour; the hair on the fore-arm turned upwards towards the elbow; without callofities.

Inhabits Borneo.

The name *Oran Outang*, in the Malay language, ſignifies a wild man, or rather a being of intelligence. Except the face this animal is almoſt entirely hairy. His legs are ſhorter than his arms, and he can walk eaſily upright. He lives in thick woods, moſtly alone; he ſleeps upon trees, and feeds on vegetables, but likewiſe on crabs and oyſters. He varies in ſize,

SIMIA.

from two to five feet high. He is not ſo lively and active as other apes. Is ſaid to run off with women. But, as he has been ſeldom brought to Europe, and as ſeldom ſeen and deſcribed by intelligent travellers, his hiſtory is ſtill obſcure. Some philoſophers have contended, from the ſtructure and actions of this animal, that he is a ſpecies of the human race. But the actions he performs in captivity are merely imitations, the effects of diſcipline, like the dancing of bears or dogs; and anatomy ſhews that his reſemblance to the human figure is far from being perfect. The compariſon is in other reſpects inept. It is not the *os ſublime* alone which diſtinguiſhes man from the brutes; it is the *ſpiritus intus*, the *mens divinior*, which exalts him above the animals which corporeally reſemble him. Made but a little lower than the angels, how great is the diſtance between man and the animal which in figure and in capacity approaches him the neareſt!

2. Simia *Lar*, The Gibbon. The arms nearly as long as the body.

Inhabits India.

Of this animal there are two varieties, a larger and a ſmaller. In the face he reſembles the human ſpecies more than the Oran Outang. His arms are ſo long that when he uſes them in walking, which he frequently does, he ſtoops but little. He is of a black colour. One of this ſpecies lived many years at Dalkeith, the ſeat of the Duke of Buccleuch, near Edinburgh. He was at firſt very tame and gentle, and affectionate to his keepers: but for ſeveral of the laſt years of his life he became wild and was confined.

3. Simia *Sylvanus*, Pygmy. With a longiſh head, the arms ſhort.

Inhabits Ethiopia, Guinea, the Eaſt Indies, &c.

This is a very hardy animal, and even in Europe brings forth young. He is nearly the ſize of a fox; is eaſy to tame, very docile and frolicſome. He mimics our ſmiles and our frowns; and Linnæus ſays, he imitates the forms of ſalutation among the Caffres. He has a ſtrong memory, and knows his old benefactors after many years. He feeds on fruit, and does much miſchief to gardeners. He alſo lives on eggs, and is probably the animal that gave occaſion to the antient fable of the wars of the Pygmies and the Cranes.

4. Simia *Mormon*, Tufted Baboon. With a ſhort beard, naked

SIMIA.

naked ſwollen cheeks, obliquely ribbed or ſtriated; bloody coloured calloſities.

Inhabits India.

This ſpecies is nearly five feet high. He makes a very groteſque figure with his ribbed face, his white beard, and the erect tuft of hair on his forehead. He is more cleanly than other baboons, ſomewhat flegmatic, but very ſtrong.

5. Simia *Maimon*, Mandril. With a ſhort beard, the cheeks blue and ſtriated; calloſities naked.

Inhabits Guinea.

Varies in ſtature from two to five feet high. Theſe animals are great thieves, and go in large troops to plunder the vineyards and orchards.

6. Simia *Cynamolgos*, Hare-lipped monkey. Without a beard; noſtrils wide and bifid; tail arched; calloſities naked.

Inhabits Africa.

Theſe do much injury to the fields of millet. The negroes catch them in traps, or ſhoot them with arrows, and eat them. The reſt run to one that has been wounded, and endeavour to draw out the arrow, or to bite off the wood.

7. Simia *Jacchus*, Striated ape. With ſpreading ears, covered with long hair; the tail long, ſhaggy, and curved; the nails ſubulated; thoſe of the thumb round.

Inhabits the Braſils.

One of the moſt active, reſtleſs, and cunning of the genus, and ſo ſmall that it can take up its lodging in a coco-nut. Its fore feet are like thoſe of the ſquirrel; which it likewiſe very much reſembles in its manner of life. It eats inſects, fruit, bread, cheeſe, birds, fiſhes, &c. It ſmells of muſk.

8. Simia *Paniſcus*, Sapajou. Black, without beard, the fore feet with four toes, the thumb wanting.

Inhabits South America.

A lively, docile, but delicate animal. He makes admirable uſe of his long cylindrical prehenſile tail, and ſupplies with it the want of the thumb on the fore feet. With it he can catch fiſhes; and when many of them want to go from one tree to another, they hang by one another like a chain from ſome branch, and ſwing backwards and forwards till the laſt reaches

SIMIA.

ches the other tree; the firſt then quits his hold, and ſo the whole chain removes.

GEN. III. LEMUR. Fore teeth in the upper jaw, 4, with a vacuity in the middle; in the under jaw, 6, longer, ſtretching forwards, compreſſed, parallel and cloſe; one canine tooth on each ſide; grinders, many, ſomewhat lobed, the foremoſt longeſt and moſt acute.

The ſpecies of this genus in their habit and manner of life very much reſemble the Apes; but in the figure of the head, which is ſhaped like that of a fox, and in the length of the hind legs, they are chiefly diſtinguiſhed from them. They approach likewiſe to the Opoſſums in theſe particulars, and may perhaps form a connecting link between this Order and that of the Feræ.

1. Lemur *tardigradus*, Tail-leſs Maucauco. No tail. Of a light brown colour.

Inhabits Ceylon.

This animal, notwithſtanding the trivial name given it by Linnæus, is lively and active, at leaſt in its native place, and in warm weather. Its feet are formed like hands; the nails on the inner toe of the hind foot next the thumb are pointed, on the other toes round. It is of the ſize of a ſquirrel; has long legs; lives in pairs; and the male is exceedingly affectionate to the female.

2. Lemur *Mongoz*, Woolly Maucauco. With a tail of the ſame colour with the body.

Inhabits Madagaſcar and the neighbouring iſlands.

Of the ſize of a cat, but with longer legs. Eats fruits and ſweet things; is eaſily tamed; leaps ſeveral yards at a ſpring; goes always on four feet, and ſleeps much. Has fine orange-coloured eyes, very ſoft curled brown hair, and a long woolly tail, which, when he ſits, he throws round his neck. Sits often upright when he eats. Is good natured and gentle.

3. Lemur *volans*, Colugo, (Dr Shaw.) A flying animal, by means of a ſkin extended from the head to the hands, from thence along the ſides to the feet, and from the feet to the apex of the tail.

Inhabits

LEMUR.

Inhabits Guzaratte, and the Philippine and Molucca iſlands.

This animal has been made a diſtinct genus by Pallas under the name of Galeopithecus, the teeth differing from thoſe of the Lemur. It lives on the fruits of trees, and flies in the twilight like the bat.

GEN. IV. VESPERTILIO. The Bat. The teeth erect, pointed, and cloſe. The hands palmated, made for flying, by means of a membrane ſurrounding the body.

Linnæus places the animals of this genus in the Order of Primates, on account of their agreeing with the other genera in having two pectoral mammæ, in their pairing, in their having the thumb ſeparated from the fingers, and in the fore teeth being four in many of the ſpecies. In their wings, which are formed by a membrane connecting the fingers of the fore feet, they differ from all the animals of this claſs. They remain by day in concealed places, and in the twilight they come abroad. On the appearance of the owl, which preys upon them, they retire and hide themſelves again in their holes. They feed on inſects of all kinds, which they take flying. Spallanzani has diſcovered a ſingular property in Bats, viz. that they ſeem to have the ſenſe of ſeeing independent of the eyes; for, when blind-folded, or their eyes put out, they fly not only as uſual without running againſt oppoſing objects, but avoid them with the utmoſt preciſion.

The Genus is divided into nine ſections, according to the number and ſituation of the teeth.

1. Veſpertilio *Vampyrus*, Ternate Bat. With no tail, the noſe plain, the membrane divided between the thighs.

Inhabits the weſtern parts of Aſia, the iſlands of the Indian and Pacific Oceans.

Theſe animals are of the ſize of a ſquirrel, and their wings, when extended, often meaſure four, five, or ſix feet, from tip to tip. By day they hang in large cluſters from the branches of trees; by night they ſuck the blood of ſlaves or perſons aſleep in the open air, by inſinuating their aculeated tongue into a vein ſo gently as not to be perceived; and, by agreeably fanning the air with their wings, they caſt the ſufferer into

VESPERTILIO.

a profound ſleep, from which he never awakes if the animal is not diſturbed. They live on fleſh and fiſh; likewiſe on fruits; and they are exceedingly fond of the juice of the palm tree, with which they will glut themſelves till they fall down. They are probably the Harpies of the antients.

2. Veſpertilio *auritus*, Eared Bat. With a tail, the noſe and mouth plain, the external ears double and larger than the head.

Inhabits Europe. B.

This ſpecies is about two inches long; of a dark grey colour, mixed with yellow. They are found in old walls and in clefts of rocks.

3. Veſpertilio *murinus*, Common Bat. With a tail, the mouth and noſe plain, the ears leſs than the head.

Inhabits Europe. B.

Theſe animals come out in the twilight, particularly in warm evenings, to feed on the Phalænæ and other inſects; but are themſelves a prey to Owls. They are taken by hanging a number of the heads of the burdock made white with meal, upon a pole: at this they fly and are held by the hooked ſcales of the calyces. They cannot eaſily take flight from the ground. In winter they appear motionleſs and dead, hanging by the hind feet; but upon being diſturbed they ſhew ſigns of life, and even fly away.

4. Veſpertilio *noctula*, Great Bat. Has a tail; the noſe and mouth plain; ears oval, with a cover.

Inhabits France, Germany, &c. B.

The largeſt of the Britiſh ſpecies; meaſures 15 inches between the tips of the wings.

5. Veſpertilio *Ferrum equinum*. With a tail; the noſe reſembling a horſe-ſhoe; ears of the ſame ſize with the head, without a cover; the tail half the length of the body.

Inhabits France, &c. B.

This ſpecies has been found in Britain, but rarely.

ORDER II. BRUTA.

THE characters of this Order are, 1. They have no fore teeth, either above or below. Their feet have toes which are armed with ſtrong claws. The covering of the body is various, as is alſo that of the tail, with which they are in general all furniſhed. They have two pectoral mammæ, and ſome have likewiſe more on the belly. In general they are without weapons of offence, but ſome are armed. They delight in the warm regions; and live, except the Trichecus, on land, and in general in flats, for they move but ſlowly. A few of them climb trees. Their food is procured chiefly from the vegetable kingdom, but ſome live on ſmall animals. They are naturally innocent and gentle. None of them are natives of Europe.

GEN. V. BRADYPUS. The Sloth. Grinders 6, obliquely truncated and cylindrical; the two firſt longer than the reſt, and at a diſtance from them; body covered with hair.

The animals of this genus have ſome reſemblance to the Simiæ and Lemures, which they connect with this Order. They go upon four feet, but very ſlowly; though they eaſily climb up trees to feed on the leaves and fruit. They have four ſtomachs like the ruminating animals, but very ſhort inteſtines. Their teats are ſeated on the breaſt. They are more active in the night than by day.

1. Bradypus *tridactylus*, Sloth. Three toes on the feet; the tail ſhort.

Inhabits the warmer regions of South America.

This animal is about the ſize of a fox. He is the ſloweſt of all animals, hardly moving more than fifty paces in one day. His motion is attended with a plaintive cry, which is like the word Ai, pronounced ſix times in an aſcending muſical ſeries. When he has once got upon a tree he

BRADYPUS.

he does not leave it till he has ate all the fruit, and then, to ſave himſelf the trouble of deſcending, he rolls himſelf up into a ball and lets himſelf fall down. He chiefly feeds on the leaves of the Cecropia peltata; he is exceedingly tenacious of life and will live a month or more without food, which is a very convenient quality in an animal ſo ſlothful. He never drinks; dreads rain; and hangs by his feet from a branch when he ſleeps.

2. Bradypus *didactylus*. Two-toed Sloth. Two toes on the fore-feet; no tail.

Inhabits South America and India.

Smaller than the former ſpecies; eats little, but drinks willingly.

GEN. VI. MYRMECOPHAGA. Anteater. No teeth. Tongue cylindrical, can be thruſt far out of the mouth, which is narrow and forms a ſort of roſtrum. Body covered with hair.

Theſe animals feed chiefly on Ants. They thruſt out their long ſlender tongue on which the Ants gather; they then draw it in and devour them. They have ſtrong crooked and pointed nails, which ſerve them to draw the Ants from their neſts and to defend themſelves, even againſt tygers. They can be tamed; they ſleep by day and go abroad in ſearch of food by night. They are eaten by the ſavages.

1. Myrmecophaga *jubata*. Great Anteater. Four toes on the forefeet, five on the hind; tail with long hair like that of a horſe.

Inhabits South America and Congo in Africa.

This ſpecies is nearly four feet long. He covers himſelf with his tail when it rains.

2. Myrmecophaga *didactyla*. Little Anteater. Two toes on the fore feet; four on the hind feet; tail ſhaggy, prehenſile.

Inhabits South America.

About the ſize of a Squirrel. His tongue is four inches long, covered with a glutinous matter, that the Ants may adhere to it. When attacked he rolls himſelf up like a

He

MYRMECOPHAGA.

Hedge-hog. He has hanging ears; two teats or mammæ on the breaſt, and two on the belly.

GEN. VII. MANIS. No teeth. Tongue, cylindrical; can be thruſt out of the mouth, which is peaked. Body covered above with boney moveable ſquamæ or ſcales.

The animals of this Genus reſemble the Anteaters, and feed likewiſe on Ants. The covering of the body is the diſtinguiſhing character. The ſcales have, in figure and ſituation, very much the appearance of thoſe of the cone of a Pine; and they are a ſort of armour to theſe otherwiſe defenceleſs animals. They have no cry, they walk very ſlowly. Their fleſh is eatable, particularly that of the tail; they have two pectoral teats.

1. Manis *pentadactyla*. Short-tailed Manis; five toes.
Inhabits Guinea, China, India, &c.

The ſcales are large with a few briſtles riſing between them; the tail is ſhorter than the body.

2. Manis *tetradactyla*. Long-tailed Manis. Four toes.
Inhabits India.

Differs from the former, in having ſmaller ſcales, and in the tail, which is twice as long as the body. When attacked, it rolls itſelf up, and exhibits a clue of ſharp-pointed ſcales, which braves the fury of all enemies.

GEN. VIII. DASYPUS. The Armadillo. No canine teeth, grinders 7 or 8 in each jaw, ſhort and cylindrical. Body covered with a cruſtaceous coat, interſected by bands or zones.

The breaſt and belly of theſe animals are ſet thinly with briſtles. They burrow under the earth with great eaſe and quickneſs. By this means, and by their rolling themſelves up, they defend themſelves againſt their enemies. They go out during the night and feed on fruits and roots, and likewiſe on fleſh. The female brings four young every month. Their fleſh is eatable, but it ſmells of muſk. The ſpecies are diſtinguiſhed by the number of their bands.

DASYPUS.

1. Daſypus *novemcinctus*. Nine banded Armadillo. Nine bands; four toes on the fore feet; five on the hind feet.

About a foot in length, and the tail as much.

Inhabits North America.

Lives on fruits and ſmall animals. Its fleſh is eatable. It burrows in ſand-hills.

GEN. IX. RHINOCEROS. With a ſolid perennial horn on the ſnout, of a conical form; not fixed in the bone.

1. Rhinoceros *unicornis*. With one horn and a wrinkled ſkin.

2. Rhinoceros *bicornis*. With two horns and ſmooth ſkin.

Inhabit the tropical regions.

The manners and habits of theſe animals are the ſame, and in the opinion of ſome Naturaliſts, they are hardly ſpecies but merely varieties.

The Rhinoceros is nearly as large as the Elephant, but not ſo tall. He is dull and ſluggiſh; delights in marſhy places where he rolls himſelf in the mud. Feeds on hard ſhrubby plants, and according to Thunberg, chiefly on a ſpecies of Stoebe, (Stoebe Rhinocerotis): he alſo eats Rice and the ſugar cane. His voice is like the grunting of a Hog; his ſight is weak; but his ſenſes of hearing and ſmell are ſo much the more acute. The ſkin of the firſt is thick and hard, and wrinkled in ſuch a manner, that the ancient painters repreſented him as if covered with a coat of mail with regular plates. His horn is not placed as in other animals, on the bone, but merely on the ſkin of the noſe. It is not caſt like thoſe of Deer, &c. but continues permanent or perennial. In a full grown Rhinoceros, it is nearly three feet long. He is a peaceable animal, and inoffenſive, except when he is attacked. The eternal warfare between him and the Elephant is a fable. He can be tamed, and he is often hunted as ſport. The female brings but one young at a time. The firſt ſpecies is the Unicorn of the Scriptures.

GEN.

GEN. X. ELEPHAS. The Elephant. The canine teeth in the upper jaw are long tuſks; none in the under jaw; proboſcis very long and prehenſile; body nearly bare.

Elephas *maximus*.

Inhabits the torrid zone of the old world.

The only ſpecies of this genus. The Elephant is not only the largeſt of known land animals, but the moſt ſagacious, docile, and tractable. He is from 14 to 16 feet high, and weighs 4500 pounds. His ſkin is hard and wrinkled, but ſtrong, and upon the back an inch thick. He is commonly of a dark grey colour; the red or at leaſt the white coloured are extremely rare: and, in Pegu and Siam, bloody wars have been waged for the mere title of king of the White Elephants. The eyes of this animal are ſmall and languid, but expreſſive; his ears are large and hanging; his feet are round, and divided into five toes or hoofs. But the remarkable organ of the Elephant is his proboſcis, which ſerves him to breathe through, to ſmell, to cry, and with it he introduces his meat and drink into his mouth; it is alſo a weapon of offence, and ſerves inſtead of hands; when contracted it is three feet long, when ſtretched out nine feet. At the end of the proboſcis is a ſort of flexible hook, with which he can unlooſe knots and buckles, open locks, tear ſmall flowers in pieces, &c. &c. When he ſwims he carries his proboſcis always high above the water, for the ſake of reſpiration; and, when he ſleeps, he preſſes the end of it cloſe to the ground, that no mouſe may creep in, as Pliny juſtly remarks. The brain of the elephant is uncommonly ſmall for his bulk, and contradicts the hypotheſis that the ſize of the brain is in proportion to the mental powers of the animal. He has a great appetite, and it is computed that a ſingle elephant conſumes as much food as would ſerve thirty negroes. He feeds entirely on vegetables, ſuch as the leaves of trees, rice, and other gramina. He delights in ſhady woods and ſwamps, and he ſwims with the greateſt eaſe even through ſtrong currents, as is ſhewn by the paſſage of Hannibal's elephants acroſs the Rhone. The propagation of theſe animals is the moſt obſcure part of their hiſtory. With the loſs of freedom they reſign the pleaſures of love. They breed only in the darkeſt receſſes of the woods, and at rutting time are ſo fierce that the attempt to obſerve them is difficult and dangerous. The female brings but one young at a time. When

ELEPHAS.

they are about three or four years old the long canine teeth, which afford ivory, begin to appear in both ſexes. In ſituation and ſtructure theſe teeth differ from thoſe of other animals, and rather reſemble horns. When full grown they are caſt; and in large elephants they are ſeven feet long, and weigh from 180 to 200 pounds. The age to which this animal lives is not accurately aſcertained; probably it exceeds two hundred years. Elephants in the wild ſtate are gregarious, except at rutting time. They are catched by means of tame females trained for the purpoſe. Theſe they follow till they are ſecured and lodged in a ſtable. After a ſhort period of melancholy, they begin to be reconciled to their fate, they acknowledge the dominion of man, and gradually diſpoſe themſelves to receive his inſtructions. The incredible docility of ſo enormous an animal, which has not for generations been in a domeſticated ſtate, but muſt always be taken wild, juſtifies the pre-eminence we have aſcribed to him at the outſet of this deſcription. This talent has in various ways been turned to the uſe of man, or made ſubſervient to his pleaſure. The Romans for a paſtime, taught this ponderous animal to dance on the rope, to write, to feign himſelf ſick, and ſo to be laid on a litter, and drawn off by four others, &c. Formerly elephants were much uſed in war; they were armed with a coat of mail, and towers full of men were placed upon their backs. The invention of gunpowder has brought the practice into diſuſe; for, as they deteſt fire and ſmoke, they turn with fury upon their own people. They are ſtill much uſed for draught, and can eaſily move with forty hundred weight. Their march is quick, like a ſhort gallop, and they are ſo ſure-footed, that on the rougheſt road they never ſtumble. The ivory they afford has been an article in requeſt ſince the Trojan war. Their fleſh is ſavoury and equal to the beſt beef. Their dried dung is uſed in Ceylon for fuel. They are the Behemoth of Job.

GEN. XI. TRICHECUS. Walrus. No fore-teeth (in the full grown animal); canine teeth in the upper jaw ſtand ſingle; grinders wrinkled; body oblong; lips doubled; hind-feet united into a fin.

Theſe characters, and the want of fore-teeth, give theſe animals a place in this order: for their conſtant reſidence in the water;

TRICHECUS.

water; the abſence of the external ear; the elongated body, which declines in bulk gradually towards the tail, and the ſhort fore-feet like fins, connect this Genus both with the Seals and the Whales. All the ſpecies of Walrus inhabit the ſea; they live on fuci, corallines, and teſtaceous animals; they do not eat fleſh.

1. Trichecus *Roſmarus*. The Morſe. The canine teeth of the upper jaw ſtand at a diſtance from the other teeth, and extend far out of the mouth.

Inhabits near the mouths of rivers, within, and about the North polar circle.

Theſe animals go in troops of a hundred or more. They roar like a bull; they ſnore when they ſleep; they defend themſelves furiouſly againſt their enemies. They are eighteen feet long; the young have two ſmall fore-teeth in the upper jaw; the canine teeth are two feet long; theſe weigh ſometimes thirty pounds, and exceed ivory in whiteneſs. They have one or two young at a time, and are killed on account of their oil and teeth.

2. Trichecus *Manatus*. The Sea Cow. With no canine teeth.

a. Auſtralis, hairy.

b. Borealis, naked.

Inhabits the weſtern ſhores of America, and of the iſlands between that and Kamtſchatka; frequently entering the mouths of rivers.

The naked variety is in length 23 feet, and weighs 8000 pounds. The native Americans ſometimes tame this animal, which is ſaid to delight in muſic, and may therefore, perhaps, be the Dolphin of the antients. It is very voracious. Its fleſh is eatable. It has two pectoral teats. The upper lip is ſet with ſtiff incurved vibriſſæ. It bellows like a bull.

The carcaſe of one of theſe animals was about ſixteen years ago thrown aſhore near Leith. It was much disfigured; and the Fiſhermen extracted its liver and other parts, from which a conſiderable quantity of oil was obtained.

ORDER III. FERÆ.

THIS Order contains the Beaſts of Prey; they have ſix ſharp-pointed teeth in the upper jaw, and ſolitary canine teeth

teeth in both jaws. Their ſkin, for the moſt part, is beautiful; and few want the tail. The feet have toes. The teats are placed upon the belly, but ſome have them alſo on the breaſt. Their pointed teeth and claws ſerve them inſtead of all other weapons. No place of our earth is intirely deſtitute of them; ſome live in the water, others upon land, ſome of them inhabit both elements; and ſome climb trees. In running they are very ſwift, and in the night watchful. They are all carnivorous: they are cunning and cruel. Some make themſelves much to be dreaded by man: others may be tamed, and ſome are domeſticated and ſerve for hunting, or for protection. In general they are uſeful either by their ſkins, or by the medecines they afford. Their fleſh is ſeldom eaten; but their skins are valuable.

GEN. XII. PHOCA. Seal. Fore-teeth acute; in the upper jaw 6, parallel, the two outer ones larger than the reſt; in the under jaw 4, parallel, equal, ſeparate, and ſomewhat obtuſe. Canine teeth in both jaws on each ſide, one; twice the length of the fore-teeth; acute and ſtrong; the upper ones at a diſtance from the fore-teeth; the under ones from the grinders. Grinders, from 5 to 6, narrow with 3 points. No external ears; the hind-feet united. The tongue bifid.

Seals are a dirty and inquiſitive race; they are bold and quarrelſome, waging bloody war on account of the females: they are, however, capable of being tamed. They are polygamous, one male having many females. Their fleſh is delicate and juicy, and their oil and ſkins are in requeſt. In ſummer they live much on land; in the winter keep in the ſea. They cannot remain long under water; but ſwim eaſily there,

PHOCA.

there. They walk with great difficulty on account of the poſition of the feet, the fore ones being ſet much backwards, and the hind ones being united. They live on fiſh and other ſea animals.

1. Phoca *urſina*. Sea bear. With external ears.

Inhabits the ſea coaſts near Kamtſchatka, and the iſlands between Aſia and America; likewiſe in New Zealand and Falkland's iſlands.

This animal is found in ſummer in herds in the northern Archipelago: he removes from it in autumn, and probably winters in ſouthern regions. He lives in polygamy, each male having a ſeraglio of from 30 to 40 females, of whom he is very jealous, and furiouſly endeavours to guard againſt the intruſion of all rivals. The male tyranniſes over his wives, eſpecially if they have been negligent in the care of the young; and theſe, with tears in their eyes, fall at the feet of their lord and ſupplicate forgiveneſs. The old and impotent are obliged to retire from ſociety and paſs the ſorrowful remainder of their days in ſolitude and ſleep. The males are about 9 feet long, and very fat. The females have ſeldom more than one young at a time. Their fleſh is eatable.

2. Phoca *leonina*. Sea Lion. The fore part of the head of the male has a ſort of creſt.

Inhabits the South polar regions, and on the ſhores of Chili.

This animal is particularly deſcribed by the author of Lord Anſon's voyage. He is full 20 feet long, and has a ſingular appearance on account of the fleſhy creſt upon his noſe, which is compoſed of the ſkin blown up like a bladder, and which often hangs over his bifid upper lip, and defends his head from the ſtroke of a cudgel. When ſleeping on ſhore, they place centinels to give alarm in caſe of danger. At the breeding ſeaſon, they abſtain from food for nearly two months, and grow very lean.

3. Phoca *vitulina*. Sea Calf: common Seal. Without external ears; the back part of the head ſmooth; the body of a dark brown colour.

Inhabits the Northern ocean; alſo the Pacific and Caſpian ſea. B.

This animal ſleeps generally aſhore, on a ſtone ſtanding a conſiderable height above the water. The females bring two young

PHOCA.

young at a time. The teats are ſituated on the abdomen, and can be drawn in. They feed on fiſh, and are particularly fond of the herring, and the fat oily kinds, ſuch as the Cyclopteri. They are eaſily killed by a ſtroke on the noſe; but little regard blows on any other part. They are of a gentle nature, very docile, and may be tamed. Their fleſh is very good: it was formerly admitted to the tables of the great. The ſkin, which is cloſe covered with ſhort hair, ſmooth and ſhining, is uſed for caſes of various kinds, and for ſhoes; and the oil ſerves many valuable purpoſes.

4. Phoca *barbata*. Great Seal. The head ſmooth without external ears; the body blackiſh.

Inhabits the Northern coaſts of Scotland, and the South of Greenland: very common in Iceland. B.

This animal nearly reſembles the common Seal; but is larger; that growing to the length of 5 or 6 feet only; this reaching 12 feet. The female generally brings forth two young, which are white, in the months of November or December.

GEN. XIII. CANIS. Dog. Fore-teeth in the upper jaw, 6, the outermoſt longer than the reſt, and at a diſtance from them; the intermediate ones lobated; in the under jaw, 6, the two outermoſt lobated. The canine teeth on both ſides, in each jaw, ſolitary; grinders, 6 or 7; more than in any other genus of this order.

The animals of this genus feed on the fleſh of others: when urged by neceſſity, on vegetables. The female has many young, and has 10 teats, 4 on the breaſt, and ſix on the belly. The males want thoſe on the breaſt. They run ſwiftly, but none of them climb.

1. Canis *familiaris*, Faithful dog. Tail bent upwards in a curve, and inclining to the left ſide.

Inhabits wherever man inhabits; it is alſo found wild.

The dog eats fleſh, dead carcaſes, and farinaceous vegetables, but refuſes them green. He digeſts bones; eats graſs to procure a vomit; dungs upon ſtones; drinks by lapping; urines ſideways, lifting his hind leg, and very frequently, when he meets

CANIS.

meets ſtrange dogs: he ſmells at the anus of another dog; has the ſenſe of ſmell very acute; runs ſideways, and walks upon his toes: he hardly ſweats; but when warm lolls out his tongue; when about to lie down, he turns ſeveral times round: he is watchful even when aſleep; frequently dreams; is quarrelſome in his amours. The female when in heat admits all comers; ſhe ſnarls at them, and they remain inſeparable for a time. She goes with young 63 days, and brings forth from 4 to 8 puppies; the males like the father, the females like the mother.

The dog is the moſt faithful of all animals; he dwells with man; fawns at the approach of his maſter; will not allow any one to ſtrike him; runs before him on a journey, and where two ways meet he looks back; is very docile, may be taught to ſeek what is loſt; is watchful by night, gives notice of the approach of ſtrangers; guards property committed to his charge; drives cattle home from the field; keeps in rein-deer, and guards oxen and ſheep from wild beaſts. In the chace he keeps lions from getting away; ſtarts game; ſtands when he finds birds; creeps cautiouſly towards the net; brings the game when killed to the ſportſman without injuring it. In France is employed to turn the ſpit; in Siberia to draw ſledges. Begs at table; when he has ſtolen any thing, is afraid and hangs down his tail; eats greedily; is always maſter at home; hoſtile to beggars; barks at ſtrangers, but does not bite them; he licks wounds, and thus relieves ulcers and the gout. Howls at muſic; bites the ſtone thrown at him; on the approach of ſtorms, grows ſick and ſmells amiſs; is ſubject to the tænia; when mad he communicates his rage by biting, he then grows blind and bites himſelf; howls when empyreumatic oils are rubbed on his tail; is often affected with gonorrhoea: is hated by Mahometans. He is ſacrificed by anatomiſts for the purpoſe of ſhewing the circulation of the blood, the effects of its transfuſion, of the cutting of nerves, the lacteal veſſels, &c.; and by phyſicians for exploring the effects of poiſons. *Linn.*

Naturaliſts enumerate between thirty and forty varieties of this ſpecies; and it is not decided among them which is the original the others have deſcended from. Buffon ſuppoſes it the Shepherd's dog, and others the water ſpaniel.

2. Canis *Lupus*. The Wolf. The tail hanging down and bent inwards.

CANI8.

Inhabits moſt parts of the world.

The Wolf was formerly indigenous in Britain; it was extirpated in Scotland in 1680, in England much earlier; in Ireland not till 1710. Wolves hunt in troops and kill cattle, ſheep, horſes, ſwine and dogs; they are ſo ſuſpicious, that they hardly enter into thick woods; they dread the ſight of a rope trailed along; they do not enter the door of a fold, but always leap the fence; they hate the ſound of a trumpet; their ſenſes of hearing and ſmelling are acute; they pair in January, go with young ten weeks, and bring from five to nine blind whelps; they are at full growth in the third year, and live to 15 or 20 years; oppreſſed with hunger or cold they attack their own ſpecies and man; they endure hunger long; walk with their claws drawn in; eaſily bend their neck; howl in the night; are kept at a diſtance by fire which they are afraid of, and are poiſoned by balls of carrion incloſing the Lichen vulpinus, and the ſeeds of the Daphne Mezereum.

3. Canis *Vulpes*. The Fox. The tail ſtraight, white at the point.

Inhabits Europe, Aſia, Africa and Chili. B.

The Fox is a very cunning, and when young a very playful animal; his hole is under ground; he digs it himſelf, or takes poſſeſſion of that of the badger; lays up his proviſion, preys upon lambs, ducks, poultry, and ſmall birds, but not on Hawks, or other ſtrong ſmelling kinds; is fond of grapes and grows fat on them; when pinched with hunger, eats the dung of other animals, and if in the neighbourhood of the ſea, will eat crabs, muſcles, and other ſhell-fiſh. He does not commonly prey in the neighbourhood of his hole; when in ſeaſon, cries during the night; flies the noiſe of fire-arms and the ſmell of gun powder, and is chaſed away by means of ſmoke. His urine is ſo offenſive, that he uſes it as a defence againſt the hounds when purſued. The young are brought forth blind.

4. Canis *Hyæna*. The tail ſtraight; the hair upon the neck ſtands erect; the ears are naked; the feet have four toes.

Inhabits the Eaſt, Perſia, Africa, &c.

The Hyæna makes a hole under ground, or lives in caves; he endures long the want of food; is greedy of the fleſh of human

CANIS.

man carcaſes, which he digs from their graves; whatever he ſeizes in his mouth, when irritated, he never quits but with life, and thus becomes an eaſy prey to the hunter. Theſe animals are ſo uſeful in clearing away garbage, that would ſoon become putrid and infect the air, that at the Cape of Good Hope, and at Gondar in Abyſſinia, when they come at night in flocks, they are not diſturbed.

5. Canis *aureus*. The Jackal. The tail ſtraight; the body of a pale tawny colour.

Inhabits the warmer regions of Africa.

The Jackal lies hid in the day in woods and mountains; hunts by night in packs of 200; a thieviſh animal; walks ſlowly, keeping his head low, but when he has ſtarted game runs very quickly; does not attack men, but will devour children; is carnivorous, but will alſo eat ripe fruits and roots. The female goes a month with young, and brings forth from 5 to 8 cubs. The cry of this animal is horrid, like howling interrupted by a bark; and when one begins, all within hearing ſet up the nightly ſcream, and other beaſts of prey are rouſed by the ſound. When an unfortunate Stag, or other animal is raiſed, they join in the chace of the miſerable fugitive, while the Lion or the Tiger lie in wait to ſeize him as he paſſes and devour him; a circle of the hunters then patiently ſit round, till the lordly beaſt has ſatiated his hunger, has picked his favourite pieces, and retires, leaving them the offal.

GEN. XIV. FELIS. Cat. Fore teeth in both jaws, 6; thoſe in the middle equal: grinders 3. Tongue ſet with prickles pointing backwards. Claws retractile.

The animals of this Genus run ſwiftly, and climb readily. They are for the moſt part dangerous beaſts of prey, hunt chiefly in the night, taking their prey by ſurprize, and ſpringing upon it; when it is in ſight they move their tails to and fro; the females have 8 teats, and have ſeveral young at a time.

1. Felis *Leo*. The Lion. The tail long, the body tawny.

Inhabits

FELIS.

Inhabits Africa, Perſia, India, Japan, formerly likewiſe Paleſtine, Armenia and Thrace.

The Lion is from 8 to 9 feet long; his neck and ſhoulders are covered with a long mane; the hair on the reſt of his body is ſhort and cloſe. His prey is the larger animals, Horſes, Deer, &c. and, never but from neceſſity, Man. It is the nature of the whole animals of his kind to take their prey by ſurprize; otherwiſe the diſpoſition of the Lion is noble and generous; he is magnanimous and capable of gratitude; he deſpiſes the ſmaller animals as unworthy his attention, and he diſdains to pray on carrion. He does not, like the ſpecies from which this genus takes its name, torment the unhappy ſufferer that has fallen under his power, but kills it at once with a ſtroke of his paw. His ſtrength is ſo great, that he can with eaſe run off with a heifer. The Lioneſs is about one fourth ſmaller than the male. She goes with young five months, and brings forth 3 or 4 at a time, which continue to ſuck for twelve months, and are above five years in coming to perfection. They live long; ſome have been kept in the Tower of London for 60 or 70 years. Their fleſh is eaten in Abyſſinia, and in other parts of Africa.

2. Felis *Tigris*. The Tiger. With a long tail; the ſpots on the body all in ſtripes.

Inhabits the warmer parts of Aſia; alſo China and Japan, and on Mount Ararat.

This ſpecies lives in woods and thickets, chiefly near rivers. He is inſidious, cruel, ſtrong, and ſwift: he has a very diſagreeable ſmell; is moſt hoſtile to man, and in India lays waſte whole diſtricts; even though kept tame from his birth, he exerciſes his native ferocity the moment he has recovered his liberty. He preys upon his own kind, and even upon his offſpring. He attacks men and lions; but yields to the Elephant. He is a moſt beautiful animal, and nearly the ſize of the Lion; but he has no trace of the generoſity of that king of the foreſt.

3. Felis *Pardus*. The Panther. The tail long; orbicular ſpots on the upper part of the body; on the under part, ſtripes.

Inhabits Africa and the warmer parts of Aſia.

This

FELIS.

This animal is next in ſize to the Tiger; he does not attack man unleſs provoked; he enters houſes by night, and ſeizes domeſtic animals. His manners, in other reſpects, generally agree with thoſe of the Tiger.

4. Felis *Leopardus*. The Leopard. With a middle ſized tail; the body yellow, with black ſpots which nearly touch one another.

Inhabits Africa; eſpecially the weſtern parts.

This ſpecies has a great reſemblance to the preceding one. His ſkin is remarkably pretty. The ground is of a golden yellow-colour, and the ſmall black ſpots which ſtand three or four together, are more numerous, and more regular than in the Panther. In ſtrength and ferocity, he is little inferior to the Tiger, but he does not ſo readily attack man. He may be tamed.

5. Felis *Catus*. The Cat. With a long tail marked with rings of a different colour.

a. Wild Cat. The rings on the tail of a fuſcous colour; blackiſh ſtripes on the body; three on the back, longitudinal; on the ſides, ſpiral.

Inhabits Europe, and the woods of Aſia bordering upon it. B.

This is now the moſt deſtructive beaſt of prey in our Iſlands: he lives in trees and hunts for birds and ſmall animals, ſuch as Rabbits, Hares, Rats, Mice, Moles, &c.; he makes great havock among poultry, and will even kill young lambs, kids, and fawns; he rejects warm and ſalted meat, and vegetables; he drinks ſparingly. His eyes ſhine in the night; the pupil, in a ſtrong light, is perpendicular and narrow; in the dark, it is full and round; his back when rubbed in the dark, gives out electric ſparks: theſe animals engender in the ſpring; at that time, the voice of the female is a mixture of lamentation and quarrelling; ſhe goes 63 days with young, and brings from 3 to 6 kittens, which are blind for nine days. The Cat is fond of particular plants, ſuch as the Nepeta, Marum, and roots of Valerian.

b. Domeſtic Cat. Smaller than the wild Cat; its hair ſhorter and cloſer.

The Cat varies much in its colours, like all domeſtic animals. The male has ſeldom more than two colours: the female

FELIS.

male often. When young, it is exceedingly playful, and on this account, together with the beauty of its form, its cleanlineſs, and ſemblance, at leaſt, of affection, it is a favourite with ſome, while it is as unreaſonably, and unaccountably diſliked, and even dreaded by others. It has ſuffered more from vulgar prejudices than moſt animals. It has been ſaid to ſuck out the breath of children, and to fly at the throats of grown perſons: the firſt is evidently impoſſible; and the latter is founded on a miſtake of the manners of the animal; it will indeed fly at thoſe it is moſt intimate with at particular times, and ſeem inclined to bite; but it has no malice at theſe times; the action merely indicates the approach of the amorous ſeaſon, and the indication is made in the way that is natural to the animal. It is cleanly, and buries its excrement. It is ſuppoſed to be deceitful, ſelfiſh, and deſtitute of attachment to mankind; but if we may believe an article in the *Journal de Medecine* for December 1771, a Cat not only ſhewed affection for its maſter while alive, but watched his body when dead, and for a long time viſited his grave. Linnæus ſays *pulices non habet*; this is undoubtedly a ſlip, tho' it is retained by Gmelin; he meant to ſay *pediculos*.

6. Felis *Lynx*. The Lynx. With a ſhort tail obſcurely annulated, and black at the tip; the head and body of a light red colour, ſpotted with black; the ears have a tuft of hair at the points.

Inhabits the thick woods of Europe, America, and the North of Aſia.

This is a very ravenous animal; he lives in hilly and woody countries; eaſily climbs trees, from which he precipitates himſelf upon the larger animals as they paſs below, ſtrangles them, ſucks their blood, devours the brain, liver and inteſtines, and then leaves them. He has very fine eyes, and has been celebrated for the acuteneſs of his ſight. Length of the body four feet, of the tail 6 inches.

GEN. XV VIVERRA Fitchet. Fore-teeth 6, the two middle ones the ſhorteſt; canine-teeth one on each ſide, longer than the other teeth; grinders more than 3; the tongue often ſet with aculei pointing backwards. The claws ſtand out.

The

ERRA.

The animals of this genus have long bodies of equal thickness; ſhort feet, for the moſt part five toes; the claws not retractile; ſmall ears; a ſharp pointed ſnout; an orifice below the anus, which leads to a follicle, the receptacle of a fetid, unctuous matter, which has been ſecreted by its proper glands. They are ſwift; ſome walk upon the whole foot; ſome climb; others dig. The females have all numerous teats.

Viverra *Ichneumon.* The tail thick at the baſe, tapering to the apex, which is tufted; the inner toes ſomewhat diſtant from the reſt.

Inhabits Egypt, on the banks of the Nile.

The Ichneumon has long been famous in Egypt, where it goes by the name of Pharaoh's rat. When the Nile is low, it feeds on the eggs of the Crocodile and other amphibious animals, ſuch as Serpents, Frogs, Lizards, &c.; and when that river overflows, it retires to the neighbouring fields and gardens, and feeds on Cats, Rats, Mice, Poultry, Worms, Inſects, and the eggs of Birds; it is a bold and crafty animal, ſtealing ſlily towards its prey, then ſpringing upon it. In its engagements with the Coluber Naja, it is frequently bitten, and, it is ſaid, immediately ſeeks for the Ophiorhiza Mungos, which it uſes as an antidote, and then returns to the charge. It is often tamed, and clears houſes from Mice like a Cat.

2. Viverra *Putorius.* American Polecat. Of a blackiſh colour, with five parallel white lines running along the back.

Inhabits North America.

This animal is remarkable for its exceſſively feetid odour; when hunted or irritated, it diſcharges a liquor of ſuch an extremely offenſive ſmell, that neither man nor beaſt can endure it; with this it beſprinkles its enemies at the diſtance of three fathoms, and the air for a hundred paces round is completely infected with the poiſonous, noiſome, and ſuffocating effluvia. This damps the ardour of moſt dogs. Clothes that have been wetted with it retain the ſmell for a month, and there is no way of getting rid of it ſooner but by burying them in freſh earth. Notwithſtanding this quality, it is frequently tamed, and its fleſh eaten. It keeps its young in holes in the ground, and in hollow trees. It is a great enemy to birds; it breaks their eggs and devours their young.

3. Viverra

VIVERRA.

3. Viverra *Civetta.* Civet Cat. The tail ſpotted on the upper ſide, duſky towards the point; the mane cheſnut-coloured; the back marked with aſh-coloured ſpots.

Inhabits Ethiopia, Guinea, Congo, and the Cape of Good Hope.

The perfume called Civet is the produce of this ſpecies: it is ſecreted in a bag ſituated under the tail, and the ſubſtance is taken out with a ſpatula two or three times in a week, and about a dram each time is obtained. In Holland, the animals are kept in cages for the purpoſe.

GEN. XVI. MUSTELA. Fore-teeth, 6; in the upper jaw erect, acute, and ſeparate; in the under, obtuſe and cloſe, two of them more inward. Tongue ſmooth.

The Genus is divided into two ſections containing 1. the Otters, *Lutrae*, with webbed feet; and 2. the Weaſels, *Muſtelae*, with toes unconnected.

a. *Lutrae.* With webbed feet.

1. Muſtela *Lutris.* The Sea Otter. The hind-feet hairy; the tail a quarter of the length of the body.

Inhabits the Ocean between Aſia and America.

Theſe animals run and ſwim very ſwiftly; they ſleep on dry land; are cunning, but timorous; they pair; the female brings but one cub at a time, of which ſhe is extremely fond: ſhe has two teats ſituated on the belly. The ſkin of the Sea Otter is in high requeſt in China.

2. Muſtela *Lutra.* The common Otter. The hind-feet not hairy; the tail half the length of the body.

Inhabits Europe, the northern parts of America and Aſia as far as Perſia. B.

The Otter feeds entirely on animal food, ſuch as fiſh, frogs, and freſh water cruſtaceous animals. He lives in holes under ground which open under the ſurface of the water, and always have an air hole opening in the middle of ſome buſh. He prowls during the night on the ſhores of rivers, and when he obſerves his prey in the water, he darts upon it, and brings it to land to be devoured. He can remain a long

MUSTELA.

long time below water. The female brings 3 or 4 young ones in May. Otters, when taken young, can be eaſily tamed, and taught to catch fish. When attacked by dogs, they fight bitterly, and are killed without uttering a cry or complaint.

b. *Muſtelae.* With toes unconnected.

3. Muſtela *Foina.* Common Martin. The body of a dark cheſnut colour; the throat white.

Inhabits Germany, France, and the ſouthern parts of Europe. B.

This animal preys by night, living on ſmall quadrupeds, frogs and birds: it is particularly fond of eggs and poultry; it will likewiſe eat ripe fruits; it is a great enemy to cats, and may be tamed if catched when young. The female brings 3 or 4, or more, at a time. It lives in woods, and breeds in hollow trees. It is hunted for its ſkin, which has a muſky ſmell.

4. Muſtela *Martes.* Pine Martin, The body of a dark cheſnut colour, the throat yellow.

Inhabits the northern parts of America, Aſia and Europe. B.

The ſkin of this ſpecies makes a conſiderable article of commerce, being preferred to that of the former. Its manners are nearly the ſame. It lives in foreſts, eſpecially where the Pine-tree abounds.

5. Muſtela *Zibellina.* The Sable. The body of a dark brown colour, the forehead white, the throat aſh-coloured.

Inhabits the North of Aſia and America.

This animal produces one of the moſt coſtly furs; it is of a dark or blackiſh colour, ſoft and ſhining, and the hairs lying equally to either ſide. It lives on Squirrels, Weaſels, Hares, and in winter on Birds, particularly moor-game, and in autumn, on berries. Sleeps by day and preys by night: about the end of March, the female brings from 3 to 5 young ones.

There is a white variety; but it is rare.

6. Muſtela *Putorius.* Foumart. The body of a chocolate colour, the mouth and ears white,

Inhabits among rocks, heaps of ſtones and rubbiſh, in Europe and the Aſiatic part of Ruſſia. B.

MUSTELA.

This animal has an offenfive ſmell; but its ſkin when dreſſed does not retain it. It is very active and nimble, runs faſt, and can climb up the ſides of walls. It is very deſtructive to pigeons, poultry, rabbits, and young game of all kinds. It is never ſeen abroad in the day, except when forced from its hole; and is ſeldom hunted but in winter, when it is eaſily found by its footſteps in the ſnow. It frequents ſtables, barns and dwelling houſes to prey upon poultry. It likewiſe lives on Frogs and can catch fiſh, Eels, &c. The female brings 5 or 6 young at a time.

7. Muſtela *erminea*. Ermine. The point of the tail black.

Inhabits Europe, the colder regions of America, and the northern parts of Perſia and China. B.

This is the animal which produces the fur commonly uſed on the robes of Magiſtrates. It is browniſh in ſummer, but in winter changes to a pure white, except the tip of the tail, which is black. Its manners are thoſe of the common Weaſel, of which ſome think it is only a variety.

8. Muſtela *vulgaris*. Common Weaſel. In Scotland the Whitret. The body of a reddiſh brown colour above, white below, tail of one colour.

Inhabits the temperate and cold regions of Europe, and the north of Aſia, as far as Perſia. B.

The common Weaſel is about 7 inches long excluſive of the tail, its height not above two inches and a half. It is very deſtructive to young birds, poultry, rabbits, &c. It will follow a Hare, which is terrified at the ſight of this little animal, and gives itſelf up without reſiſtance, but with piteous cries. It ſeizes the Hare near the head, and tho' the wound is ſo ſmall as ſcarcely to be perceived, the animal never recovers. It is excellent for clearing barn-yards and out-houſes from rats and mice, but muſt be carefully prevented from getting into places where poultry are kept, as it kills the chickens and greedily devours the eggs. It does not touch its food till it begin to putrefy. The female brings 4 or 5 or more at one litter, which are blind for ſome time. The Weaſel has a ſtrong diſagreeable ſmell when irritated or purſued. In winter in northern countries it grows white.

GEN. XVII. URSUS. Fore teeth 6, in the upper jaw alternately excavated within, in the under jaw the two outermoſt are longer than the reſt, and lobated, the two in the middle are ſituated farther in at the baſe than the reſt. The canine teeth ſolitary: grinders 5 or 6, the firſt cloſe to the canine teeth. Tongue ſmooth. The eyes have a nictitating membrane. Noſe prominent.

The animals of this Genus have five toes; the innermoſt is cloſe to the reſt; they walk on the whole foot; they climb, and ſometimes uſe their fore feet as hands.

1. Urſus *Arctos*. Common Bear. Of a blackiſh brown colour; a very ſhort tail.

Inhabits the northern parts of Europe and Aſia.

This is a dull phlegmatic animal; dwelling for the moſt part ſolitary in woody and mountainous places. Except when ſeverely puſhed he never attacks man. He willingly feeds on other animals, and prowls about during the night; but he contents himſelf likewiſe with roots which he digs up; he is particularly fond of honey. When attacked he raiſes himſelf on his hind feet, ſtrikes his enemy with his paws, and makes uſe of his claws and teeth ſeldomer than other wild beaſts. He ſleeps during the winter, longer or ſhorter according to the heat or cold of the ſeaſon. Except the head, the ſkeleton of the Bear has a great reſemblance to that of a Man. The Bear ſecludes himſelf during winter, and the female at that time brings forth her young; ſhe has from one to three at a time, which ſhe ſuckles. Their fleſh is ſaid to be agreeable when fat; their ſkins are an article of commerce.

2. Urſus *maritimus*. Polar Bear. White, with a very ſhort tail; the head and neck long.

Inhabits within the north polar circle.

This is a very bold and ferocious animal. He reſides in the higheſt northern latitudes, and is never ſeen ſouthward of the arctic circle, except when drifted upon iſlands of ice. He ſwims well, and can remain long below water; his common food is fiſh, dead ſeals, and whales; but he alſo attacks man, and whatever land animal comes in his way. He retires in winter into deep dens under the ſnow or ice. The female

URSUS.

brings one or two cubs at a time; for theſe ſhe ſhews the moſt extraordinary affection, and no danger, no wounds can make her abandon them; ſhe embraces them to the laſt, and bemoans them with the moſt piteous cries. This ſpecies ſometimes grows to be thirteen feet long.

3. Urſus *Meles*. The Badger. The tail of the ſame colour with the body; which is aſh coloured above, black below, with a black band running acroſs the eyes and the ears.

Inhabits Europe and the northern parts of Aſia. B.

This is a very harmleſs and inoffenſive animal, though when attacked few defend themſelves better or bite with greater keenneſs. He lives ſolitary in a hole of his own digging; here he ſleeps by day, and at night goes abroad for food. He lives on roots, nuts, inſects, honey, frogs, eggs, young birds, and ſmall animals. There is a tranſverſe orifice under his tail, from which a white ſubſtance of a very fetid ſmell conſtantly exudes. He is exceedingly ſluggiſh, ſleeps the whole winter over, repoſing in a round form, with his ſnout cloſe to the above mentioned orifice, the exudation from which, when not aſleep, he never ceaſes to ſuck. He is very cleanly, and never defiles his hole. The ſkin is uſed; the fleſh is eaten, and the hind quarters are made into hams not inferior to bacon.

4. Urſus *Lotor*, The Racoon. The tail annulated; a black ſtripe acroſs the eyes.

Inhabits America, particularly north of the line; alſo the Weſt India iſlands.

The Racoon is ſomewhat like the badger; he lives in hollow trees, and feeds on the ſugar cane, and on birds and their eggs. Is eaſily tamed, and is good humoured, ſportive and familiar. He dips his food in water before he eats it. His ſenſes of ſmell and touch are exquiſite. His ſkin is valued next to that of the beaver for making hats.

GEN. XVIII. DIDELPHIS. Opoſſum. Fore teeth ſmall and rounded. In the upper jaw, 10; the two in the middle longer than the reſt. In the under jaw, 8; the two in the middle very ſhort, and broader than the reſt; the canine teeth long; the grinders knobbed;

DIDELPHIS.

knobbed; the tongue fringed with papillæ. In moſt ſpecies there is a bag or falſe belly, in which the teats are placed.

All the animals of this genus have a lengthened head and ſlender body. Their tail is only hairy at the origin, and for the moſt part covered with ſmall ſcales. The legs are ſhort; the ſoles of the feet naked, and the animals walk on the whole foot. The females bring many blind naked young ones, which hang at the teats of the mother till they get their hair, and can ſee and run. They live in the warmer regions; chiefly in America, in woody places, under ground, eaſily climb trees, but walk ſlowly. No ſpecies has yet been found in Europe or Africa.

There are ſeveral ſpecies of this genus; one of which, an inhabitant of New South Wales, has a broad hairy membrane, which extends from the middle of the fore legs to the ankle joint of the hind legs. By the aſſiſtance of this membrane the animal flies like the flying ſquirrel.

1. Didelphis *Opoſſum*. The half of the tail hairy, a light coloured ſpot above the eyes.

Inhabits America in the warm and more temperate parts of it; alſo, the Weſt Indies, Ceylon, and the Philippine and Molucca iſlands.

This animal lives concealed under the leaves of trees; catches birds and ſucks their blood; but feeds likewiſe on every kind of vegetable. He hangs by the tail, and ſo ſwings himſelf from tree to tree; when diſcovered by an enemy he feigns himſelf dead. The female is provided with a ſort of pouch under her belly, which, by the help of ſtrong muſcles and ſlender bones, is opened and ſhut; within this lie the teats. When ſhe is about to bring forth, ſhe retires to ſome cloſe buſh, where ſhe makes a thick neſt of dry graſs, and brings four, five, or ſix young ones at a time. Theſe are exceedingly ſmall, blind and naked, but they immediately creep into the pouch, where they are ſuckled and continue till they are well formed. After they leave the pouch it ſtill ſerves them for a retreat in time of danger, and the mother endeavours to ſave herſelf and them by flight. Her attachment to them is ſtrong, for no tortures can force her to open the pouch when they are in it. The animal is about the ſize of a fox.

2. Di-

DIDELPHIS.

2. Didelphis *gigantea*, Kanguroo. With a long and thick tail; the hind feet almoſt thrice the length of the fore feet; with three toes.

Inhabits New Holland.

This ſingular animal is made a Didelphis in the laſt edition of the Syſtema Naturæ, probably on account of its abdominal pouch. But it has now been well examined by the Naturaliſts of England; and Dr Shaw in his Naturaliſts Miſcellany, has made a new genus of it under the name of Macropus; the characters of which are, Front-teeth in the upper jaw 6, emarginated; in the lower jaw 2, very large, long, ſharp, and pointing forwards; grinders 5 in each jaw, diſtant from the other teeth; fore legs very ſhort; hind legs very long: abdominal pouch in the female.

It was firſt diſcovered in New Holland in 1770, by Capt. Cook. It is equal in ſize to a full grown ſheep. Its feet very much reſemble thoſe of a bird, but it reſts on the whole foot; and its hind legs being long and muſcular, it makes leaps to a ſurpriſing diſtance. It has two mammæ ſituated within the abdominal pouch, and ſo ſmall are the young when firſt produced as ſcarce to exceed an inch in length. It can ſeparate to a great diſtance the two long teeth in the under jaw; and, it can ſupport itſelf on the tip of its tail. It has been brought alive to England, and has bred there.

GEN. XIX. TALPA. Mole. The fore teeth in the upper jaw 6, unequal; in the under jaw 8; canine teeth ſingle, largeſt in the upper jaw; grinders in the upper jaw 7, in the under jaw 6.

The fore feet are uncommonly ſtrong, divided into five toes, which are armed with long claws, and fitted for digging. The hind feet are ſmaller. The head ends in a long moveable ſnout, and is united behind to the body without the intervention of any remarkable neck. The eyes are exceedingly ſmall: inſtead of the external ear, there is only a ſmall raiſed border round the orifice. The legs are ſo concealed under the neck, that the feet only are viſible. Moles dig cylindrical holes under ground, and live on worms, and the larvæ and pupæ of inſects, but ſeldom touch vegetables of any kind.

Talpa

TALPA.

Talpa *europæa*. Common Mole. Has a ſhort tail, and five toes on each foot.

Inhabits the northern parts of Europe, Aſia, and Africa. B.

Moles pair in the ſpring, and the female has four or five young at a time, which at firſt are quite naked. The neſt is made very ſoft and warm with moſs and herbage, under the largeſt hillocks of the field, conſiſting of an interior hillock, ſurrounded with a ditch, which communicates with ſeveral galleries on purpoſe to carry off the moiſture; and the neſt is covered with a dome of earth like the flat arch of an oven. In forming its tracks or runs, the mole throws up large heaps of mould, which are extremely injurious to meadows, graſs lands, and cultivated ground. It is therefore every where perſecuted. Its fleſh is eaten by the Arabs as the greateſt delicacy, and its ſkin affords an exceedingly ſoft fur. Its ſenſes of hearing and ſmelling are remarkably acute; and it is ſaid to be expelled from fields and gardens by coriander ſeeds, and other ſtrong ſmelling vegetables which it cannot endure, being placed in its tracks. In northern countries the mole hybernates.

GEN. XX. SOREX. Shrew. Two fore teeth in the upper jaw long and bifid; in the under jaw 2 or 4, the intermediate ones ſhorteſt; many canine teeth in both jaws; grinders pointed.

The head of theſe animals is lengthened out into a ſharp ſnout. Their eyes are very ſmall. In the figure of the body they reſemble mice, and in the ſhape of the head and in the fore feet of two ſpecies, they are like the mole. They live under ground, ſome near ſtreams, and in general feed on inſects and worms.

1. Sorex *fodiens*. The Water Shrew. The tail about the length of the body, and almoſt naked; the body dark coloured above, aſh-coloured below, the toes ciliated.

Inhabits England, Burgundy, Germany, Pruſſia, and Siberia. B.

This ſpecies is not common; it frequents the banks of rivers, and conceals itſelf under ground through the day, and comes abroad only in the evening or early in the morning.

It

SOREX.

It ſwims with great facility even under water. The female has ten teats, and brings forth 9 young ones in the Spring.

2. Sorex *araneus*, Common Shrew. Tail about half the length of the body, which is whitiſh underneath.

Inhabits Europe and the northern parts of Aſia. B.

This ſpecies is leſs than the preceding; it frequents old walls, heaps of ſtones, and holes in the earth near villages, in dunghills, hay-ricks, ſtables, barns, and other out-houſes, alſo damp places; feeding on corn, inſects, and any filth. It has ſo ſtrong a muſky odour, that though cats kill they will not eat it. Its voice is a ſhrill whiſtling. In Spring or Summer the female produces 5 or 6 young at a birth. There ſeems to be an annual mortality of this ſpecies in the month of Auguſt, numbers of them being found dead in the fields, highways, &c. about that time.

GEN. XXI. ERINACEUS. Hedge-hog. Fore teeth in the upper jaw 2, ſtanding ſeparate; in the under jaw 2, ſtanding cloſe; canine teeth in the upper jaw on each ſide 5, in the under jaw 3; grinders in both jaws on each ſide 4: back ſet with ſpines.

The head of theſe animals is round, ending in an obtuſe ſnout. Thoſe parts of the body not ſet with ſpines are covered with briſtles. The tail and feet are ſhort. They feed on all kinds of worms and inſects.

Erinaceus *europæus*. With rounded ears, and the noſtrils bordered on each ſide with a looſe flap.

Inhabits Europe, the coldeſt parts of it only excepted. B.

The hedge-hog is a very innocent, harmleſs animal, living entirely on toads, frogs, worms, beetles, ſnails, nuts, ſmall birds, and dead carcaſes. It reſides in thickets, hedges, and the bottom of dry ditches, which are covered with buſhes, where it builds a neſt of moſs, graſs or leaves; it hybernates under hedges or thick buſhes, rolled up in moſs, dried graſs and leaves. It ſwims eaſily. When alarmed it rolls itſelf up into a ball, which form it does not eaſily quit, unleſs thrown into water. It ſqueaks when its feet are pinched. It is eaſily tamed, and may be kept in kitchens during the whole Winter without becoming torpid. It pairs in the ſpring; the female

ERINACEUS.
female has three pectoral and two abdominal mammæ, and brings from three to five young ones.

ORDER IV. GLIRES.

THE animals of this Order have two ſharp and pointed fore teeth both above and below, which are at a diſtance from the other teeth, and without canine teeth. (Plate I. fig. 10.) Their ſkin is in general beautiful; in one genus it is armed with ſpines. Their feet have toes, and they ſometimes uſe the fore feet as hands, and ſit in common on the hind feet. They have 8 abdominal mammæ. They have no particular weapons of offence. Their upper lip is cleft. Between their hind feet lie certain glands which ſecrete a ſtrong ſcented humour. They live in various climates, a few in water, but the moſt of them on dry land. They run and leap eaſily. They are cleanly animals, and live chiefly on vegetables. Some of them chew the cud. They are in general timid, but lively and active, and many of them conſtruct neſts for themſelves. Their fleſh is eaten by ſome; their furs are valuable, and ſome afford medicines.

GEN. XXII. HYSTRIX. Porcupine. The fore teeth obliquely cut off at the ends; grinders 8. Toes 4 or 5. The body covered with ſpines and hair.

The animals of this genus have no affinity to the Hedgehog except in the covering of the body.

1. Hyſtrix *criſtata*. Creſted Porcupine. With 4 toes on the fore feet, 5 on the hind feet; a creſt of ſtiff briſtles on the head; tail ſhort.

Inhabits Aſia, Africa, Spain, Italy.

The Porcupine dwells in large holes of its own digging,

HYSTRIX.

which have many apartments, but only one opening. It comes abroad during the night to ſeek its food, which conſiſts of fruits, roots, and herbs; it is particularly fond of box-wood. Its ſpines or quills are long, ſtiff, and light, annulated with black and white; theſe it erects when attacked, and uſes them in defence, but cannot dart them againſt its enemies. It is a harmleſs animal, except in gardens where it does much miſchief. The female goes with young ſeven months, and brings from two to four young, which are eaſily tamed. Its fleſh is eaten.

GEN. XXIII. CAVIA. Cavy.* The fore teeth wedge-ſhaped; grinders 8. Toes of the fore feet 4 or 5; of the hind feet 3, 4 or 5. Tail either ſhort or wanting. No clavicles.

The animals of this genus, in their nature and manners, very much reſemble Rabbits, and ſeem intermediate between them and the Mouſe. Their head is thick, ſhort, and obtuſe; the external ears are rounded, and almoſt naked. Their body is covered with hair. Their feet are very ſhort. They breed often, and have many young, but do not live to any age. They walk ſlowly, and are fond of burrowing. They are all originally from America.

Cavia *Cobaya*. Guinea Pig. No tail, variegated with white and red or black.

Inhabits Braſil, is domeſticated in Europe.

This is the Mus Porcellus of the former editions of the Syſtema Naturæ; it is a very prolific animal; the female breeding at two months old, bringing from 4 to 12 young ones at a birth, and having 8 or 9 litters in a year. It is a reſtleſs, timid, ſtupid animal. The males frequently devour their own young. They paſs their whole lives in ſleeping, eating, and in the propagation of their ſpecies.

GEN. XXIV. CASTOR. Beaver. The fore teeth in the upper jaw truncated, in the tranſverſe angle hollowed; in the under jaw tranſverſe at the points; grinders

* This ſhould be pronounced Savy.

CASTOR.

grinders in both jaws 4: tail long, flat, and ſcaly: the clavicles perfect.

Caſtor *Fiber*. The common Beaver. Tail oval, flat, abbreviated.

Inhabits the northern parts of Europe, Aſia, and America.

The Beaver lives in the temperate regions of both worlds, extreme heat or cold being alike unfriendly to him. At preſent North America is his chief reſidence; for he is a ſuſpicious animal, and avoids the haunts of man; or, if forced to live in his neighbourhood, he foregoes his own propenſities, ceaſes to live in ſociety, and neglects his accuſtomed maſonry. In June or July, a number of beavers aſſemble on the banks of a river; and there, with united labour and induſtry, conſtruct a dwelling, which ſhames the art of man, and in poſſeſſion of which a native of California, or of Tierra del Fuego, would think himſelf happy. They fell trees, cut them into ſtakes, form palliſades, mix ſtones and clay together, build dams, and then make their own ſeparate apartments, which are of an oval form, reſembling the kraal of a Hottentot. Theſe are of various ſizes, according to the ſtrength of the family that is to inhabit it; from 4 feet to 10 in breadth, and are fit to contain from 4 to 20 beavers. Theſe apartments have in general two doors, one to the water and another to the country. They are kept extremely clean, the Beaver never performing any dirty office at home. They keep their magazines under water, and ſtore them with leaves and the bark of trees againſt the neceſſities of Winter. After Autumn they betake themſelves to theſe dwellings, where they breed and bring up their young till the Spring, when they leave them and penetrate into the wooded parts of the country.

Beavers produce the Caſtor of the ſhops, from two follicles, ſituated under the tail, between two large glands. Their ſkin is in great requeſt for the manufacture of hats. In 1763, the Hudſon's Bay Company ſold upwards of 54,000 of them at one ſale.

The female has 4 teats; ſhe goes four months with young, and produces two at a time, which are eaſily tamed.

The Beaver was once indigenous in the north of Scotland about Loch Neſs; but is now extinct.

GEN. XXV. MUS. The upper fore teeth wedge-ſhaped; the grinders 3 on each ſide, ſeldom 2: the clavicles perfect.

The greateſt part of the animals of this genus live in holes and corners under ground; ſome of them in water, and leave their hiding places at night to feed; they are timid creatures; they run quickly, climb, and ſome ſwim. Their natural food is ſeeds, fruits, and the roots of plants; but they likewiſe eat animal food. They are very prolific, and ſome of them migrate from one place to another.

This is a numerous genus, and therefore ſubdivided into five ſections:

1. With the tail compreſſed at the point.
2. With a round naked tail.
3. With a round hairy tail.
4. With cheek pouches.
5. With a ſhort tail, or none at all; no ears.

The common rats and mice belong to the ſecond ſection.

1. Mus *Rattus*, The black Rat. With a tail longer than the body; colour of the body black, grey underneath.

Inhabits Perſia and India, Europe, except the moſt northern parts of it; whence it is ſaid to have been carried to Africa and America. B.

It is as probable, however, that the Rat has been imported into the old world from America; for, in the antients, we have neither the name nor the deſcription of any animal that agrees with it. It is a fierce but cautious animal; it drinks but ſeldom; is very voracious and ſpares hardly any thing eatable, not even its own ſpecies. It is itſelf devoured by owls, weaſels, and by cats, though not always by the laſt. The female has 10 mammæ, and brings at a time five or ſix young ones. On its tail there are about 250 rings; and inſtead of a fifth toe on the fore feet there is only a claw.

2. Mus *decumanus*. Brown Rat. With a tail longer than the body and ſcaly; body covered with ſtrong, light brown hair, white underneath.

Inhabits India and Perſia, whence, during the laſt century, it was brought to Europe, and has now ſpread over the greateſt part of it. B.

This animal has nearly extirpated the former ſpecies. It not only frequents houſes, but barns, gardens and fields, and dwells

MUS.

dwells in burrows which it digs in the banks of rivers. It is a very deſtructive animal, and extremely prolific; the female producing three times in a year, and having from twelve to nineteen young at a time. The tail has about 200 rings.

3. Mus *Muſculus*. Common Mouſe. With a tail as long as the body, almoſt naked; the fore feet have 4 toes, the hind feet 5; the great toe has no claw.

Inhabits the houſes in Europe and Aſia, alſo now in America. B.

This well known little animal feeds on almoſt every thing. It is timid, mild, and gentle; it breeds at every ſeaſon of the year; and the female brings five or ſix young at a time.

4. Mus *ſylvaticus*. Field Mouſe. With a tail as long as the body, and ſcaly; the body of a yelloviſh brown colour, white below and at the ſides.

Inhabits the woods, fields and gardens of Europe; and in winter alſo barns and houſes. B.

This ſpecies feeds on nuts, corn, and acorns; but, in caſes of neceſſity, it will not only eat animal food but even prey on its own kind. It lays up great ſtores for its ſupport during winter. It burrows in the earth, where it makes a warm neſt of dry graſs and leaves, and has nine or ten young at a time. It is preyed upon by hawks, foxes, polecats, and weaſels.

5. Mus *amphibius*. Water Rat. With a tail half the length of the body; ears hardly projecting beyond the fur; feet with 3 toes and the rudiments of a fourth.

Inhabits Europe and the north of Aſia. B.

This ſpecies belongs to the third ſection. It frequents the ſides of rivers, ponds, and ditches. It lives chiefly on roots, but eats alſo frogs, ſmall fiſh, and ſpawn. It is a bold and fierce animal; it ſwims faſt and dives well. It is eaten as a delicacy by the Yakouts, who likewiſe uſe its ſkin as a fur. The female is leſs than the male; ſhe has four pectoral and four abdominal mammæ. In the rutting ſeaſon ſhe ſmells of muſk, and in April ſhe brings eight young at a birth. One of theſe animals has been found in winter curiouſly laid up in an hybernaculum formed of graſs and leaves, with above a gallon of potatoes ſtored up in one end of its burrow.

6. Mus

MUS.

6. Mus *agreſtis*. Short tailed field mouſe. With a ſhort tail and large head.

Inhabits Europe and the north of Aſia. B.

This is made a diſtinct ſpecies by Ray and Pennant, and formerly by Linnæus. In Gmelin's edition of the Syſtema Naturæ it is conſidered as a variety of the foregoing ſpecies.

7. Mus *Lemmus*. The Lemming. With a ſhort tail; the ears ſhorter than the fur; 5 toes on the fore feet; the body variegated, with tawny and black, white underneath.

Inhabits the ſnowy mountains of Scandinavia.

This ſpecies feeds on the catkins of the dwarf Birch, on the rein-deer Lichen, &c. It lives the whole winter under the ſnow. The female breeds ſeveral times in a year, bringing five or ſix young ones. But the moſt curious circumſtance in the hiſtory of this animal is its migration. When there is the appearance of a hard winter, directed by ſome inſtinctive impulſe, an immenſe army of them begin their march, keeping always in a ſtraight line; from which no obſtacle can make them deviate: if they meet a hill they go over it; if they come to a river they ſwim, if they reach the ſea they proceed and are drowned. In their journey they make prodigious havock of every vegetable production they meet with; and in their turn they ſerve as food to numbers of birds and beaſts of prey, ſo that few ever return to their native ſpot.

8. Mus *Cricetus*. The Hamſter. With pouches in the cheeks; the body very black below; upon the loins two ſpots, with a few briſtles inſtead of hair.

Inhabits Siberia, Ruſſia, Poland, Hungary, &c.

This ſpecies belongs to the fourth ſection. It burrows and makes a very artificial abode with ſeparate chambers for ſeparate purpoſes. The male reſerves one for himſelf; the female has ſeveral for the accommodation of her and her family, and others contain proviſions. This abode has a double entrance. The Hamſter collects corn, with which he ſtuffs the pouches in his cheeks, and carries it home to depoſit it in his granary. On the approach of winter, he retires, ſometimes with an hundred pounds weight of corn ſtored up, on which he feeds till the extreme rigour of the ſeaſon throws him into a ſtate of torpidity. The Hamſter is a very deſtructive animal, and is ſo prolific that he would ſoon over-run the

MUS.

the countries he inhabits; but he has a number of enemies, and is ſo unſocial as to deſtroy his own ſpecies. His fur is in high eſtimation.

GEN. XXVI. ARCTOMYS. Marmot. Fore-teeth wedge-ſhaped; grinders in the upper jaw, 5; in the under, 4. Perfect clavicles.

Arctomys *Marmota*. Common Marmot. With ears: the body duſky; reddiſh below.

Inhabits the ſummits of the higheſt European Alps.

The Marmot, according to ſome naturaliſts, is, with reſpect to figure, a ſort of connecting link between the Hare and the Rat; but its manners are different. It lives on the tops of the Alps where no trees will grow. It feeds on roots, herbs, and the tender ſhoots of graſs; but particularly on the Phellandrium Mutellina. When tame, it eats whatever is offered to it. Marmots live in ſocieties of from 5 to 14; they are fond of baſking in the ſun, and place a centinel to give warning of the approach of an enemy, which he does by a whiſtle, when they all inſtantly retire to their holes; if any of them are ſurpriſed, they defend themſelves with obſtinacy, and bite ſeverely. At the end of September they retire into their ſubterraneous burrows, which have many chambers well lined with moſs and dry graſs, where they lie in a ſtate of deep ſleep till the month of March. They are eaſily tamed; but even in a warm room they can hardly be kept awake during winter. They are taken in great numbers for the ſake of their fleſh, their ſkins, and their fat.

GEN. XXVII. SCIURUS. Squirrel. The upper fore-teeth wedge-ſhaped, the under ſharp pointed; grinders 5 above, and 4 below. Perfect clavicles; the hair on the tail turning to both ſides; long whiſkers.

The animals of this genus are for the moſt part lively, and of an elegant figure; they climb trees, though ſome burrow under ground; they live on fruits and ſeeds: they have ſhort legs; four toes, and the rudiments of a fifth on the fore-feet; five

SCIURUS.

five on the hind feet. When feeding, they ſit erect, and hold their food with the fore-feet. They have a long hairy tail. A few of them fly.

1. Sciurus *vulgaris*. Common Squirrel. The ears tufted with hair; the tail of the ſame colour with the back.

Inhabits Europe; particularly the Ruſſian woods. B.

Of this ſpecies there are ſeveral varieties. It builds a neſt for its young upon trees; which are in number from 3 to 7; and it breeds twice a year. It feeds on buds, fruits, and ſeeds, which in winter it hides under ground. It is docile, and can be eaſily tamed. It ſprings from tree to tree; and in its manner of life very much reſembles birds. Its large buſhy tail it uſes as a defence from cold and rain; and, it is ſaid, that when croſſing a river or lake on a piece of bark, the animal makes it ſerve him for a ſail.

2. Sciurus *ſtriatus*. Ground Squirrel. Of a yellow colour, with 5 dark longitudinal ſtripes.

Inhabits the northern parts of Aſia, and America.

This ſpecies burrows in the ground in woods, where, like the Hamſter, (which it alſo reſembles in having cheek pouches), it makes different chambers, and ſtores up proviſions againſt winter, depoſiting a different kind in each different chamber. It lives on ſeeds, particularly of the Pinus Cembra, and ſometimes on Mayz and other grain.

3. Sciurus *volans*. Flying Squirrel. With a membrane extended from the fore to the hind-feet, with which it flies; the tail rounded.

Inhabits the birch woods of Siberia, Livonia, Poland, &c.

This is a ſolitary ſpecies; it lives on the buds and catkins of the birch and other trees; and builds a neſt of moſs in hollow trunks. When it expands its membrane, it can fly a conſiderable way, but cannot mount.

GEN. XXVIII. MYOXUS. Upper fore-teeth wedge-ſhaped; the under compreſſed: long whiſkers: tail hairy and cylindrical; thicker towards the end: feet of equal length; four toes on the fore-feet.

All

MYOXUS.

All the ſpecies of this genus grow torpid in winter, and ſit erect on their hind feet, uſing their fore-feet to carry their meat to their mouth.

Myoxus *Muſcardinus*. Common Dormouſe. Red; the throat white; the inner toe of the hind-feet without a nail.

Inhabits the hedges and thick woods of Europe. B.

This is the Mus *avellanarius* of the former editions of the Syſtema Naturæ. It makes its neſt of moſs, graſs, or dried leaves, in the hollow of a tree, or at the bottom of a thick buſh, and brings forth 3 or 4 young at a time. It collects nuts and acorns, which it eats ſitting erect, and hides what it cannot uſe. In winter it lies torpid in its hole: a warm ſunny day will revive it; but after taking a little food, it ſoon relapſes into its former ſtate.

GEN. XXIX. DIPUS. The fore-feet very ſhort; the hind-feet very long; tail long and tufted at the point.

The animals of this genus walk, or rather leap on their long hind-legs, by the aſſiſtance of their long rigid tail, to the diſtance of 3 or 4 feet. They live on vegetables; they burrow in the ground; ſleep during the day; and drink by lifting the water in the hollow of their fore-feet.

Dipus *Jaculus*. Common Jerboa. With 4 toes on the feet; the inner toe of the fore-feet has a claw.

Inhabits Egypt, Arabia, the country of the Calmucs, and the ſouth part of Siberia.

This animal frequents dry plains covered with graſs; it lives upon roots and grain; and in Siberia it ſtores up hay in its hole. It is not much afraid of man, yet can hardly be perfectly tamed. Its fleſh is eaten by the Calmucks and Arabs. When at reſt, it ſits upon its hind-feet, and brings its ſhort feet to its throat, ſo that they can hardly be ſeen. It is about 7 inches long; its tail 10 inches. The hind-legs are three times the length of the fore-legs.

GEN. XXX. LEPUS. Hare. Fore-teeth in the upper jaw, double; the innermoſt ſmaller.

LEPUS.

The animals of this genus are all remarkably timid, and live on vegetable food. They are divided into two ſections, 1. thoſe with tails, and 2. thoſe that have no tail.

1. Lepus *timidus*. Common Hare. With a ſhort tail; the ears black at the tips, and longer than the head.

Inhabits Europe, and moſt parts of the world. B.

This well known and perſecuted animal is very defenceleſs, its ſpeed affording the only means of eſcape from danger. Its ſenſes of ſeeing and hearing, however, are exquiſite. It lives on the tender branches of ſhrubs and the bark of trees. Its enemies are Dogs, Foxes, Wild Cats, and Hawks: if a hat be thrown in the air while it is hunted, it takes ſhelter below the next ſhrub, for fear of a Hawk. Its form is ſituated in winter towards the ſouth, in ſummer facing the north. It is ſaid to delight in the ſound of a drum. It comes to maturity the firſt year, and does not live above eight. It couples in February and March; goes with young 30 or 31 days, and brings 3 or 4 at a time. Its fur is of great uſe in making hats.

2. Lepus *variabilis*. Alpine Hare. With a ſhort tail, in winter white, except the black tips of the ears, which are ſhorter than the head.

Inhabits the Alpine regions of Europe, Aſia and America. B.

This is probably but a variety of the former ſpecies; though ſome are ſaid to be white in ſummer as well as in winter.

3. Lepus *Cuniculus*. Rabbit. With a ſhort tail, nearly of the ſame colour with the body, the ears black at the tips, the hind legs ſhorter than the body.

Inhabits the temperate and warmer regions of Europe Aſia and Africa. B.

The Rabbit burrows in ſandy ground; it generally remains there during the day, and comes abroad in the evening. It lives from 8 to 9 years; the female goes with young 30 or 31 days; ſhe breeds ſeven times a year and brings from 4 to 8 young at a time, which are full grown in ſix months.

4. Lepus *puſillus*. Without a tail; colour browniſh mixed with grey, the ears nearly triangular, with white margins.

Inhabits

LEPUS.

Inhabits the ſouthern parts of the Uralensian mountains.

This ſpecies is about the ſize of a Rat; in winter it ſcarcely weighs two ounces and a half. It lives ſolitary under ground, and goes abroad in the night, feeding on the leaves, flowers and bark of the Cytiſus ſupinus, Robinia fruteſcens, Ceraſus pumila, and Malus ſylveſtris. It has a very ſtrong voice and its call is repeated at juſt intervals, 3 or 4 and even ſix times. In May the female brings forth 5 or 6 blind young.

ORDER V. PECORA.

THE animals of this Order make a very natural diviſion. They have no fore teeth in the upper jaw, but in the lower they have ſix, and ſometimes eight, which ſtand at a diſtance from the grinders. They likewiſe want the canine teeth for the moſt part, eſpecially thoſe that are not provided with horns. The grinders are flat and broad with raiſed ridges on their ſurface. (See Plate II. fig. 2.) Their feet have divided hoofs (*ungulati biſulci*), and in general they run very ſwiftly. Moſt of them have horns; their mammæ are ſituated between their hind feet. They inhabit every quarter of the world; they are all terreſtrial animals, and incapable of climbing trees. They live on vegetable food particularly the gramina; they have four ſtomachs (§ 98.) and ruminate. They are all uſeful to man in various ways, and ſupply him with food and cloathing. They preſent to him fleſh, milk, fat, leather, hair, wool, horns, &c. No other animals afford tallow. Many of them are employed as beaſts of burthen, and ſome of them are the moſt favourite objects of the chace.

GEN. XXXI. CAMELUS. The Camel. Without horns. Fore teeth in the under jaw 6, ſpoon-ſhaped; the canine teeth are diſtant, 3 in the upper, 2 in the under jaw; the upper lip cleft.

1. Camelus *Dromedarius*. The Dromedary. With one hunch on the back.

Inhabits in a wild ſtate the deſerts of the temperate parts of Aſia; over all the Eaſt and in Africa in a tame ſtate.

The Dromedary is of a mild diſpoſition except in the rutting ſeaſon or when tormented by the Gad-fly. It is the moſt uſeful of all animals for performing journies and carrying burdens over ſandy deſerts deſtitute of water; it can endure thirſt for 15 days and is capable of long faſting, being content with the ſmall thorny ſhrubs which the deſerts afford, and which are unfit for all others. It carries burdens of 1200 weight; but it will not move with more than it is able to bear, nor will it be prevailed upon to go faſter than it finds convenient. Its ſkin is valuable; its fleſh is accounted a delicacy by the Arabs, and its milk is alſo uſed.

2. Camelus *bactrianus*. The Camel. With two hunches on the back.

Inhabits in a wild ſtate the northern parts of India and the deſerts towards China. Tame it is found in the Eaſt and in Africa.

The Camel is not ſo common as the Dromedary, it is larger and ſwifter but in other reſpects very ſimilar. It has two hunches, the hindmoſt of which is the largeſt. The female goes with young during a whole year and in February produces one foal which ſhe ſuckles for two years, and in the third year it is full grown.

3. Camelus *Glama*. The back plain, a hunch on the breaſt.

Inhabits the high mountains of Peru.

This ſpecies in form and manners very much reſembles the Camel of the old world, but is much ſmaller. It is uſed as a beaſt of burden in the mountainous country of Peru, being very ſure footed.

GEN.

GEN. XXXII. MOSCHUS. No horns. Fore teeth in the under jaw 8; the canine teeth in the upper jaw ſolitary and exserted.

Moſchus *moſchiferus*. The Muſk-goat. Has a perfume bag ſituated near the navel.

Inhabits the alpine regions of Aſia.

This is the animal which produces the well known perfume, Muſk. It lives retired among the ſnowy peaks of the Alps. It is gentle and timid; it has no horns, nor any weapons but its two tuſks or canine teeth, and even theſe are wanting in the female. In form it is like the Roe-buck.—The perfume bag is poſſeſſed only by the male.

GEN. XXXIII. CERVUS. Deer. Horns ſolid, when young covered with a rough leathery coat; which afterwards falls off; they grow at the points, are annual and furcated. The under fore teeth 8; no canine teeth (tho' ſometimes there are ſingle ones in the upper jaw.)

1. Cervus *Alces*. With palmated horns without beams, and a tufted excreſcence at the throat.

Inhabits the northern parts of Europe, Aſia and America.

The Elk is of the ſize of a horſe and is very inoffenſive, except in the rutting ſeaſon. He is very ſwift and can make a journey in one day of 50 German miles. His fleſh is excellent, and his ſkin ſo ſtrong as to reſiſt a muſket ball. His horns are often of an enormous weight. He lives on the leaves of trees particularly on thoſe of the poplar, and is ſaid to be fond of the Anagyris fetida. He is not found higher than the 64th degree of North latitude.

2. Cervus *Elaphus*. The Stag. With branching horns, cylindrical and recurvated.

Inhabits Europe and the northern parts of America and Aſia. B.

This noble graceful animal is well known. His horns, which he caſts in February and has renewed in July or Auguſt, are peculiar to the male. The older he is they are the larger

CERVUS.

larger, and his age may be known by them. In general he ſeldom paſſes five and thirty or forty years. The ſeaſon of love is in September, and continues for ſix weeks. At this time bloody battles take place between rival males. The Hind goes with young 8 months and brings only one fawn at a time, which ſhe carefully conceals even from the Stag. In winter theſe animals are gregarious; they ſeparate in ſpring, none but the young ones remaining together.

3. Cervus *Tarandus*. The Rein Deer. With branched cylindrical recurved horns, palmated at the ends.

Inhabits the moſt northern Alps of Europe, America, and Aſia.

The female of the Rein Deer has horns as well as the male, but they are ſmaller. In a wild ſtate this animal is as large as an ox of two years old. He feeds chiefly on the Rein Deer lichen. In ſummer he frequents the woods and mountains, but in winter he comes down to the plains. The rutting ſeaſon is at the end of September, and in May the female brings forth two fawns. No other creature is fitted to ſupply the various neceſſities of mankind in ſo great a degree as the Rein Deer; but it is the Laplander alone who reaps the advantages to be derived from it in their utmoſt extent. He feeds upon its fleſh and milk, he cloaths himſelf with its ſkin, and with it too he covers his tent and his ſledge; he uſes it as a beaſt of burthen and for the draft; he makes all kinds of utenſils of its horns; needles of its bones; thread of its ſinews; and flaſks of its bladder. The butter made of Rein Deer milk is unpalatable, but the cheeſe of it is reckoned a delicacy.

4. Cervus *Dama*. The Fallow Deer. With branching horns, compreſſed and recurved; palmated at the ends.

Inhabits Europe, and the northern parts of Perſia. B.

This ſpecies is ſmaller than the Stag; which, in its general habits and economy, it very much reſembles. It varies in colours; one kind is of a dark brown colour, another is marked with white ſpots, and a variety perfectly white is ſometimes to be ſeen. In its wild ſtate it is a pretty bold animal, and will often fight whole days for the poſſeſſion of a favourite ſpot, or for a female.

5. Cervus *Capreolus*. The Roe Buck. With branching, erect and cylindrical horns, bifid at the ends.

Inhabits

CERVUS.

Inhabits the woods of Europe and Aſia. B.

This little elegant ſpecies is known only in a wild ſtate, and is now hardly found in this iſland except in the Highlands of Scotland, where it is growing daily more ſcarce. Its rutting ſeaſon continues from the end of October to the middle of November. The female goes with young five months and a half, and about the end of April brings generally two fawns, ſometimes three. The horns are ſhed about the end of autumn and are renewed in winter.

GEN. XXXIV. CAMELOPARDALIS. Horns very ſimple and covered with a ſkin, terminated by a tuft of black hairs; cutting teeth in the under jaw 8, ſpoon-ſhaped; the outer teeth on the outſide deeply bilobated.

Of this genus there is but one ſpecies hitherto diſcovered, conſequently there is no occaſion for a ſpecific character.

Camelopardalis *Giraffa*. The Giraffe.

Inhabits between upper Egypt and Ethiopia, and in the ſouthern parts of Africa.

It is as large as a middle ſized Camel. From the crown of the head to the ground it meaſures 17 feet, but its hind legs are ſo ſhort that from the rump to the ground it is only 9 feet. Its food is chiefly the leaves of trees; for, when it attempts to graze, it is obliged to ſeparate its long fore feet to a great diſtance. It has calloſities on its breaſt and thighs like the Camel. It was known to the Romans, but has been looked upon as fabulous, till of late years that it has been often ſeen and its ſkin brought to Europe.

GEN. XXXV. ANTILOPE. The Antelope. Horns hollow, turning upwards, cylindrical and annulated, or ſpiral; the cutting teeth in the under jaw 8; no canine teeth.

1. Antilope *Rupicapra*. The Chamois. With horns ſomewhat ſmooth, erect, cylindrical, and hooked backwards.

Inhabits the Alps of Switzerland, Dauphiny, Savoy, and Germany.

The

OVIS.

Of the Sheep, there are numerous varieties, differing in ſundry particulars, eſpecially in the horns, ſome of which have more horns than two, and ſome want them altogether. It is not now known in a wild ſtate.

It is a moſt ſerviceable animal to man, there being hardly any part of it that he does not turn to his uſe. It is ſubject to many diſeaſes: It has eight cutting teeth in the lower jaw, two of which drop out, and are replaced at two years old; four of them are renewed at three years, and the remainder at four. It eats in preference the Feſtuca ovina, Burſa Paſtoris, and plants which grow in ſalt marſhes. It is hurt by eating the Prunus ſpinoſa, Equiſetum, Ranunculus Flammula, Anthericum oſſifragum, Myoſotis Paluſtris, and Anemone nemoroſa: It is infeſted by the Hippoboſca ovina, Pediculus Ovis, Oeſtrum Ovis, Acarus Ricinus, and Faſciola hepatica.

2. Ovis *Ammon*. With arched ſemicircular horns, flat on the under ſide; with a large hairy dewlap.

Inhabits the rocky, deſert and alpine tracts in the center of Aſia; in Kamtſchatka, &c.

This ſpecies is very wild, ſwift, and active; it is about the ſize of a Deer; its fleſh and fat are eſteemed great delicacies in Siberia.

3. Ovis *Strepſiceros*. With ſtraight, carinated, and ſpirally waved horns.

Inhabits Crete, and the iſlands of the Archipelago.

This ſpecies is ſo like the common Sheep in ſize and figure, differing chiefly in the form of the horns, that ſome ſuppoſe it to be the parent ſtock from which the former is derived.

GEN. XXXVIII. BOS. With concave horns turning forward, lunated, and ſmooth: fore-teeth in the under jaw, 8; no canine teeth.

This genus comprehends animals of the utmoſt importance to the human race: they afford him beef, milk, cheeſe, butter, curds and whey as food; their ſkins make leather; their fat ſoap and candles; their horns, hoofs, bones, blood, hair, and dung, are all of uſe.

1. Bos *Taurus*. With round horns curved outwards; a pendent dewlap.

Inhabits

BOS.

Inhabits wild in Poland, Pruſſia, Lithuania, &c.: in a domeſtic ſtate almoſt every where. B.

This ſpecies, like moſt of thoſe that are domeſticated, or that are of eminent uſe to man, is very prone to variation. Of the wild kind, the moſt remarkable are 1. The Urus, mentioned by Cæſar as an inhabitant of the Hercynian foreſt, and which is ſtill found in Germany, Poland, and the North. It differs from the common cattle in having ſhorter horns, and in its forehead being covered with a quantity of curled hair. 2. The Bonaſus; the horns inclining downwards, with a long mane upon the neck; and 3. The Biſon; the horns riſing upwards and reflected, with a very long mane and beard.

Wild cattle were formerly to be found in Scotland, but they are now extinct, having been deſtroyed; there are ſtill a few preſerved in ſome parks in England. They are invariably white, with black noſes, and browniſh or black ears. Cattle exactly like theſe have been found in the Eaſt Indies, in Timan, and in Guam. Our domeſtic cattle ſeem to retain the characteriſtic mark of their progenitors; for however variable the colours on the other parts of their body may be, the ears are ſtill, without exception, either reddiſh, brown, or black.

The age of a Cow is known by its horns; at the age of four years, a ring is formed at their roots, and every ſucceeding year adds another.

When a Cow happens to have two calves, one of them a male, the other a female; the former is a perfect animal, but the latter is incapable of propagation, and is called by farmers a *Free Martin*.

2. *Bos Americanus*. American Buffalo. With divaricated horns; a long mane, and a hunch on the back.

Inhabits New Spain and the interior parts of North America.

This animal is ſtrong and thick at the ſhoulders; weaker, and more ſlender behind; the forepart of the animal is ſhaggy.

3. Bos *caffer*. African Buffalo. With horns very broad and cloſe at the baſe, divaricating downwards, then

BOS.

riſing upwards, and curved inwards; the mane ſhort.

Inhabits Africa; particularly the wooded parts behind the Cape of Good Hope.

This is a very formidable animal; it lives in woods, and ruſhes ſuddenly from the thickets upon travellers, whom it tramples under its feet, as it does horſes and oxen. It is ſo ſwift, eſpecially in running up hill, that a horſe cannot overtake it. It is fond of wallowing in mire; its fleſh is coarſe but juicy, and has the flavour of veniſon.

ORDER VI. BELLUÆ.

THE animals of this Order are diſtinguiſhed by fore teeth in both jaws, obtuſely truncated, and by hoofed feet. Their bodies are covered with ſhort hair. They never climb trees. Their mammæ in general lie between the hinder legs; but ſome have them alſo on the abdomen. Their weapons conſiſt partly in their teeth, and partly in their feet. Their food is chiefly from the vegetable kingdom. Moſt of them being uſeful to man, they are ſpread over the greateſt part of the world. Many of them ſerve as beaſts of burden.

GEN. XXXIX. EQUUS. Fore teeth in the upper jaw 6, erect and parallel; in the under jaw 6, inclining outwards. Canine teeth ſolitary, at a diſtance from the fore teeth and grinders. Two inguinal mammæ.

1. Equus *Caballus*. The Horſe. With undivided hoofs; the tail ſet with long hair.

Inhabits, in a wild ſtate, Beſſarabia and the deſerts of Great Tartary.

The Horſe alone affords the moſt indubitable proof of the ſuperiority and unbounded dominion of man over the other animals. The Wild Horſe, as it is to be found in the Highlands of Scotland, in Siberia, and in Tartary, is a ſmall, puny

EQUUS.

ny, diſproportioned, and untractable creature; but by the care and culture of man, becomes the moſt beautiful, majeſtic, and obedient of all tamed animals. The original country of the Horſe, like that of the Dog, is uncertain. The beauty of his figure is the effect of culture; conſequently we cannot conſider the noble race-horſe as the parent ſtock, nor the leſs elegant varieties as its degenerate deſcendants: but neither can we conſider Siberia, on account of its wild horſes, as the native country of the whole ſpecies. Siberia has, likewiſe, wild wheat, wild oats, and wild barley; but theſe, like its horſes, have certainly got thither by accident, and have grown wild in courſe of time. The properties of the Horſe are ſo manifold, and ſo peculiar, that we cannot give to any race a preference over the reſt. The Arabian, Spaniſh, Neapolitan, and Engliſh, are the moſt beautiful riding Horſes, and the laſt excel the reſt in ſpeed. The famous Engliſh race-horſe, Childers, has been known to paſs over 82½ feet of ground in a ſecond of time. The Friezeland are the moſt powerful and durable draught horſes.

The ſtomach of Horſes is ſmall, and at the *cardia* there is a little valve, which renders them incapable of vomiting; they ſleep little, and in general ſtanding. Their fleſh is eatable, and the Calmucks diſtil a ſpirituous liquor from their milk. If well treated, a Horſe will live from 40 to 50 years.

2. Equus *Aſinus*. The Aſs. Tail hairy at the tip; a black ſtripe acroſs the ſhoulders.

Inhabits the mountains of Great Tartary, India, Perſia, &c. B.

The Aſs has neither the elegant ſhape nor the generous ſpirit of the Horſe; but he has a number of other valuable qualities, which ſhould protect him from the unjuſt contempt he is in general treated with in the northern countries. He treads more gently and more ſecurely than the Horſe, bears heavy burdens, is uncommonly patient, and contents himſelf with the coarſeſt food. His native country too is uncertain. That he is originally, however, from the ſouthern regions, is probable from the identity of his name in the northern languages. He is found wild in Tartary, where he is gregarious. Formerly the fineſt Aſſes were found in Egypt; now Italy or Spain poſſeſs the beſt breed: in the more northern parts of Europe they are not yet introduced. The tame Aſs differs little from the wild, and is not ſubject to variation in its colour like other domeſticated animals.

Mules

EQUUS.

Mules are the offspring of the Horſe and Aſs, or of the Aſs and Mare. The fineſt are bred in Spain. They have all more of the form and diſpoſition of the Aſs than of the Horſe.

3. Equus *Zebra*. With undivided hoofs; body light, brown, with dark brown ſtripes.

Inhabits the ſouthern parts of Africa.

The Zebra, in its figure, has a great reſemblance to the Mule; and is, in reſpect of its elegantly ſtriped ſkin, the moſt beautiful of all the animals of this Claſs. It lives in troops, is exceedingly ſwift, but wild and untameable; and hence, but ſeldom and with great trouble, broke to the draught or for riding.

GEN. XL. HIPPOPOTAMUS. River Horſe. Fore-teeth in each jaw, 4; in the upper jaw ſtanding in pairs, and diſtant from the other teeth; in the under jaw, prominent, the intermediate ones longeſt: canine teeth ſolitary; in the under jaw very long, obliquely truncated and recurved. The feet with hoofs at the margins.

Hippopotamus *amphibius*.

Inhabits the rivers of Africa from the Niger to the Cape of Good Hope. In the Nile, &c.

There is but one ſpecies of this genus hitherto diſcovered. It is the largeſt of land animals except the Elephant, being ſometimes ſeventeen feet long, and almoſt ſeven feet high. The head is like that of an Ox, and round the mouth ſtand ſtiff hairs. The ſkin of the body is very thick, blackiſh, and thinly ſet with white hairs. The tail is ſhort and compreſſed. The animal ſwims under water, and walks at the bottom, though he cannot remain long at a time. He comes on land during the night and feeds on Rice, the Sugar Cane, and other plants. He is polygamous. The female brings forth one young at a time, and ſuckles it in the water. The fleſh is eatable, and the fat thought excellent.

The later Roman Emperors often brought the Hippopotamus from the Nile to Rome, and exhibited it at their games. There are coins extant of Ottacilla Severa, on which the

HIPPOPOTAMUS.
the animal is better repreſented than in the figures of many of the moderns.

GEN. XLI. TAPIR. Fore teeth in each jaw, 10; no canine teeth: on the fore-feet four hoofs; on the hinder three.

Tapir *americanus*.

Inhabits the woods and rivers of the eaſtern ſhores of America.

Of this genus likewiſe, there is but one ſpecies. It is as large as a middle-ſized Cow, and in the figure of its body reſembles the Hog. The noſe is elongated into a thin moveable proboſcis, ſtretching over the under jaw. The tail is very ſhort and naked. Its manners greatly reſemble thoſe of the preceeding genus. It ſwims well, and walks at the bottom of rivers. It is timid and harmleſs. It is the largeſt of the animals peculiar to America. Its fleſh is eaten.

GEN. XLII. SUS. The Hog. Fore-teeth in the upper jaw, 4, converging; in the under jaw, (for the moſt part), 6, inclining forwards; in the upper jaw 2 ſhort canine teeth; in the under jaw 2 projecting: the ſnout truncated, prominent and moveable. The feet for the moſt part have cloven hoofs.

The animals of this genus approach very near to thoſe of the Order of Feræ; but they feed on vegetables, and their feet have hoofs, not claws.

1. Sus, *Scrofa*. The common Hog. The fore part of the back briſtly; the tail hairy.

Inhabits the ſouth of Europe, the north of Perſia and Africa, &c. B.

The Hog, in a domeſticated ſtate, is ſpread over the greateſt part of the world; except in the coldeſt regions. In Sweden there is a variety with undivided hoofs. Hogs eat Serpents with impunity, and they have, on that account, been much cultivated in America. The Sow goes with young four months, and brings many pigs at a litter; which ſhe ſuckles by

SUS.

by numerous mammæ. The old ones often eat the young. Between the ſkin and the fleſh there is a fat of a peculiar kind which goes by the name of lard, and renders the animal nearly inſenſible.

2. Sus *ethiopicus*. With a ſoft ſack under the eyes.

Inhabits Madagaſcar, and the warmeſt parts of Africa.

This is a very fierce and dangerous animal, having large tuſks or canine teeth in the upper jaw. It burrows under ground; is ſwifter, more active, and ſagacious, than the common Hog, with which it does not mix.

3. Sus *Babyruſa*. With two canine teeth growing out of the frontal bone.

Inhabits the iſland of Java, Celebes, and Buero, near Amboyna.

This ſpecies is domeſticated in moſt of the iſlands of the Indian ocean: it is gregarious; has the ſenſe of ſmell very acute; it lives on herbs and the leaves of trees; it ſwims and dives well. It is ſaid to reſt itſelf by ſupporting its body on the branch of a tree, by its crooked tuſks.

ORD. VII. CETE.

THIS Order contains the animals of the Whale kind. They have ſpiracles or air holes on the top of the head, thro' which they breathe and eject water, called blowing; they have ſmooth ſkins, not covered with hair, their feet are very ſhort, the fore feet are formed like fins, and the hind feet are united into a horizontal tail. (See Plate II fig 11.) Linnæus has with propriety arranged them in this claſs; as they have a quadrilocular heart and red warm blood, as they breathe by means of true lungs, engender like the other animals of this claſs, are viviparous and ſuckle their young; they have likewiſe moveable eye-lids; their organs of hearing are formed like thoſe of the Mammalia; they have true bones, which are alſo found in the pectoral fins and the tail. On the other hand, they have hardly any thing in common with

fiſhes

fiſhes except that they live in the water. They chiefly inhabit the ſeas round the Poles, and among them are found the largeſt of all animals. They want, like other inhabitants of the water, a diſtinct neck; and on the back they have a fleſhy excreſcence, called the dorſal fin. They move with great velocity through their element, and feed on ſea Vermes and ſmall fiſhes. Their fat is called blubber and uſed for oil.

The hiſtory of theſe animals is ſtill very imperfect. Some notices with regard to them may be found in Marten's hiſtory of Spitzbergen, and in Egede and Crantz's account of Greenland.

Conſult alſo,

Roberti Sibbaldi Scotia illuſtrata, part. 2. Edin. 1684, folio.

——— Phalainologia nova. Edin. 1692, 4to.

J. C. Klein Hiſtoria Piſcium, miſſus II. de piſcibus per pulmones ſpirantibus. Gedan 1741, 4to.

GEN. XLIII. MONODON. Two teeth in the upper jaw, very long, ſtanding ſtraight out, and ſpirally twiſted. A ſpiracle on the fore and upper part of the ſkull.

Monodon *Monoceros*. Sea Unicorn.

Inhabits the northern ocean of both worlds.

This animal is from 20 to 22 feet long; ſome ſay from 40 to 60 feet. In general it is found but with one tooth, the other being broken off. The eyes are ſmall, the ſkin white; it has no dorſal fin. The oil which its blubber affords is thinner and does not ſmell ſo ſtrong as that of the common Whale. There is but one ſpecies of the genus known, tho' the horn is found ſometimes plain and not twiſted.

GEN. XLIV. BALÆNA. Whale. Inſtead of teeth, horny laminæ in the upper jaw. The ſpiracle with a double opening on the crown of the head.

MONODON.

1. Balæna *Myſticetus*. Common Whale. With noſtrils waved and ſituated in the middle of the fore part of the head; no dorſal fin.

Inhabits the northern ocean, chiefly about Greenland and Spitzbergen. B.

This is the largeſt of all animals, growing from 50 to 80, and 100 feet long, nay ſome, in places where they are undiſturbed, are ſaid to be 160 feet long. It has about 700 horny laminæ in the upper jaw, which at the points are ſplit into briſtles; that in the middle is ſometimes 20 feet long; theſe are what is called Whalebone. Its ſkin is black and thick; and there are often plants, corallines and ſhell-fiſh adhering to it. The female brings a ſingle young one at a time for which ſhe ſhews the greateſt affection; at birth it is near 20 feet long. Great numbers of Whales have now for many centuries been killed for the ſake of their blubber and their whalebone. Their numbers are accordingly much diminiſhed. Though they haunt the northern ſeas, they ſometimes wander ſouthward and frequently run themſelves aſhore on the coaſt of Scotland, and ſometimes even in the Frith of Forth. The beſt ſeaſon for catching them is in the months of June and July. Between the latitude of 77 and 79 degrees, there have been ſometimes 350 veſſels employed, each with five or ſix boats; and in the year 1697, there were no leſs than 1968 whales taken on the coaſt of Greenland.

2. Balæna *Phyſalus*. The Fin-fiſh. With a double fiſtula in the middle of the fore part of the head; an adipoſe fin low down on the back.

Inhabits the ocean both of America and Europe. B.

This ſpecies is nearly of the ſame length with the preceding; but is not ſo groſs; it has leſs blubber; its horny laminæ are ſhorter, its mouth is wider; its fleſh better; it ejects the water from its fiſtulæ with greater violence; it feeds on herring and mackrel.

3. Balæna *Boops*. Pike headed Whale. With a double fiſtula on the roſtrum; on the lower part of the back a horny protuberance.

Inhabits the northern and ſouthern oceans. B.

This ſpecies is 46 feet long and at the pectoral fins about 20 feet in circumference. Its ſkin is ſmooth, black, the abdomen white, with longitudinal ſulci; the tongue is 5 feet long

MONODON.

long, the eyes are ſituated near the mouth, and are of the ſize of thoſe of an ox; It is a fierce and dangerous animal, and as it has not much blubber, it is avoided by the Whale-fiſhers.

4. Balæna *Muſculus*. With a double fiſtula on the fore-head; the under jaw much broader than the upper.

Inhabits the Scottiſh Seas. B.

This ſpecies grows to 78 feet long and above 35 in circumference; the lower jaw is ſemi-circular, the upper one acute at the apex; the mouth is very wide; the horny plates are black and ſhort, the longeſt not exceeding 3 feet; there are rugæ on the abdomen, and an adipoſe fin on the back. One of this ſpecies came aſhore at Abercorn Caſtle, in the Firth of Forth, in the year 1692.

5. Balæna *roſtrata*. The Bottle noſe. The mouth juts out into a roſtrum; on the back an adipoſe fin.

Inhabits the Norwegian ſeas. B.

This ſpecies grows to be 25 feet long: it ſwims very ſwiftly and its ſight is acute; it is tame, and comes very near ſhips and will accompany them for a great way. In 1717, one of this ſpecies was taken near Maldon.

GEN. XLV. PHYSETER. Teeth in the under jaw; none in the upper. The ſpiracle on the crown of the head or ſnout.

Theſe are the Spermaceti Whales, all the ſpecies of this genus affording it.

1. Phyſeter *Catodon*. Without any dorſal fin. The ſpiracle on the ſnout.

Inhabits the northern ocean. B.

This ſpecies is about twenty-four feet long; its head is round; the gape ſmall; the fiſtula on the ſnout reſembles a noſe. In the year 1696, no leſs than 102 of theſe animals were caſt aſhore in the Orkneys at one time.

2. Phyſeter *macrocephalus*. Without any dorſal fin: the ſpiracle in the neck.

Inhabits the European ocean, Davis's Straits, &c. B.

PHYSETER.

From the head of this ſpecies is procured a conſiderable quantity of ſpermaceti; and from the inteſtines, ambergreaſe is obtained, which is ſaid to be its indurateed excrement. The animal lives chiefly on the Cuttle-fiſh, (Sepia octopodia), and grows to be 60 feet long. The mammæ of the female are retractile. The eyes are ſmall.

4. Phyſeter *microps*. With a long fin on the back; the upper maxilla longeſt.

Inhabits the northern ocean. B.

This ſpecies has a very large head, forming half of the whole animal, with ſmall eyes; and grows to be 70 feet long; one variety of it is ſometimes found of the length of 100 feet. It preys on the Porpus; and often forces herds of that animal aſhore. One of this ſpecies, 54 feet long, was ſtranded at Cramond iſland, 22d. December, 1769.

5. Phyſeter *Turſio*. With a very high fin on the back; the teeth flat.

Inhabits the northern ocean. B

This ſpecies likewiſe grows to be near 100 feet long. Its dorſal fin is ſo high, that it reſembles a ſhip's maſt.

GEN. XLVI. DELPHINUS. Teeth in both jaws. The ſpiracle in the upper and anterior part of the ſkull.

1. Delphinus *Phocæna*. The Porpus. The body ſomewhat cone-ſhaped; the back broad; the roſtrum nearly obtuſe.

Inhabits the European ſeas and the Baltic. B

The Porpus is from five to eight feet long; of a bluiſh black-colour above; white below. The eyes are very ſmall; behind them there is a ſmall auditory orifice, and between them is the ſpiracle, ſhaped like a creſcent, the concavity turned forwards. It feeds on herring, mackrel, and other fiſh. For its ſize, it yields a great quantity of excellent blubber. Its fleſh was once held in high eſteem.

2. Delphinus *Delphis*. The Dolphin of the ancients. With an oblong nearly cylindrical body; and an acute attenuated roſtrum.

Inhabits the European and Pacific oceans. B.

The

DELPHINUS.

The Dolphin is larger than the foregoing, ſmaller than the following ſpecies. It ſometimes attacks the Whale, ſo as to make him leap out of the water. The ſtory of Arion, and other alledged inſtances of its attachment to mankind, have made the Dolphin famous. It is very accurately figured on ſome antient coins of Magna Græcia. The following lines of Ovid are very deſcriptive of its manners.

Undique dant ſaltus, multaque adſpergine rorant,
Emerguntque iterum, redeuntque ſub æquora rurſus;
Inqu- chori ludunt ſpeciem, laſcivaque jactant
Corpora, et acceptum patulis mare naribus efflant.

3. Delphinus *Orca.* The Grampus. The roſtrum waved upwards; the teeth broad and ſerrated.

Inhabits the European and Atlantic oceans. B.

This is the largeſt ſpecies of the genus, growing to the length of twenty-five feet, and being ten feet in diameter. It wages perpetual war with the Seals, which, by means of its dorſal fin, it ſweeps from the rocks to which they retreat. It attacks not only Seals, but numbers of them join in attacking the Whale, which it kills and devours; it feeds likewiſe on the Turbot, (Pleuronectes maximus), and the Herring; the latter of which it is ſaid to collect into a circle by a ſweep of its tail, and then to ſwallow a ton of them at once.

§ 144.

According to the above diviſions of the Mammalia, the genera follow one another in a very natural order; yet there are many genera that approach to ſeveral others at the ſame time. For inſtance, as to external appearance, the Lemur and Bradypus follow immediately after the Simia; and the Didelphis reſembles the Lemur: by the former, the firſt diviſion is connected with the ſecond; and by the latter, with the third. The Bats, in reſpect of their pectoral mammæ, the ſtructure of their fore-feet, and their monogamous life, are connected with the animals of the firſt diviſion; but in their manners, they have ſome reſemblance to the Feræ, and in the figure of their body, to the Glires, while their power of flight

flight ſeems to connect them with the Birds. By means of the Trichecus Roſmarus and Manati, the ſecond diviſion is connected with the Phocæ, and ſtill more with the Cete; to which, likewiſe, the Hippopotamus approaches. The Feræ, by means of the Sorex, is allied to the Glires, and by the Hedgehog, to the Porcupine. The Otter too, in its manner of life, borders upon the Seals and the Beaver. The Elephant and the Rhinoceros, in the figure of their body, reſemble the Tapir and the Hippopotamus; and are likewiſe nearly allied to the other animals of the ſecond diviſion, &c. &c.

It might appear that the natural tranſition from the Whales would be to the Fiſhes: but as Birds, in their internal ſtructure, have a much greater reſemblance to the Mammalia, than Fiſhes, it is with propriety that they are made the ſecond Claſs.

§. 145.

The preſervation of the animals of the Mammalia Claſs in Muſeums, is attended with difficulty. In general they are ſkinned, and their ſkins ſtuffed. The ſmaller kinds are kept in ſpirits. It is of importance to preſerve the skeleton, particularly of the head and feet.

CHAP

CHAPTER IV.

OF

ORNITHOLOGY.

§ 146.

BIRDS, as to external appearance, are diſtinguiſhed by being covered with feathers; by a horny bill; by having two wings and two feet. As they are all oviparous, they are likewiſe diſtinguiſhed from the animals of the former claſs, to which, however, in the internal ſtructure of the body, they have a great reſemblance. Their heart conſiſts of two auricles and two ventricles; they have warm red blood; they have true bones; and even their fleſh, and other internal parts, approach nearly to thoſe of the Mammalia.

§ 147.

Each feather conſiſts of the ſhaft and the vane, and is grooved below, and convex on the upper ſide. The ſhaft is horny and elaſtic, and at the end, which is inſerted into the body of the bird, it is hollow, and called the quill; the feather is probably nouriſhed by lymphatic veſſels contained in this part. The upper part of the ſhaft is filled with a medullary ſubſtance, and is called the *rachis*, to both ſides of which, the flexible rays, (*radii*),

(*radii*), of the vane are attached; each of theſe conſiſting again of a ſmall rachis and ſide rays. The feathers are arranged over the body in what is called the Quincunx order, and between them lie the ſmall downy feathers, (*plumæ*). Some parts of the skin, which by the various motions of the bird, are much preſſed and rubbed, are bare of feathers. In Autumn, Birds moult, that is, they caſt their old and acquire new feathers, and this proceſs is generally attended with a degree of indiſpoſition. The old feathers, becoming dry, are unable to receive more nouriſhing particles, and are puſhed off by the ſpringing of the new ones.

§ 148.

As the diſtinguiſhing characters of different Birds are often taken from the colour of the different parts, it is neceſſary to give names to thoſe parts, that the deſcriptions may be accurate and intelligible. The upper part of the head, *pileus*, conſiſts of the *frons*, *vertex*, and *occiput*. The ſhort feathers on the forehead, juſt above the bill, are called *capiſtrum*; and on the ſides of the head, as far as the eyes, are the *lora*, which are often naked. The *orbita* conſiſt of the skin which ſurrounds the eyes, and on theſe, there is generally a row of ſtronger feathers called *ſupercilia*. The region between the eyes and the opening of the external ear is called the temples, (*tempora*); and between the eyes and the throat are the cheeks, (*genae*).

The upper and hinder part of the neck, near the head, is called *nucha*, and next the back, *cervix*: the under ſide, next the bill, is called *gula*, and nearer the breaſt, *jugulum*.

The trunk is divided into the fore part, (*pars prona*), and the hinder or upper part, (*ſupina*). This laſt is called the back, (*dorſum*), and is divided into the part that lies between the wings, (*interſcapulium*); the part in the middle, (*tergum*); and the hinder part, (*uropygium*). On the under ſide, behind the jugulum, is the breaſt, (*pectus*); behind that the belly, (*abdomen*); and the

the region behind the feet and the tail is called *criſſum*. On each ſide of the interſcapulium lie the ſhoulders, (*humeri*); under the wings are the *axillae*; and behind theſe, on the ſides of the abdomen, are the *hypochondria*. (See Plate III. Fig. 1.)

§ 149.

The bill conſiſts of two naked mandibles which cloſe upon one another. The under one alone is moveable, except in the genus *Pſittacus*, where the upper one is alſo moveable. They are generally of equal length, or the upper longer than the under; the Rhynchops has the under longer than the upper. Birds never have true teeth; but ſometimes the mandibles are ſerrated, as in the Ramphaſtos, (Tab. IV. Fig. 4.) or have a ſharp exſerted angle, (Tab. III. Fig. 3.) as in many of the Accipitres; or a notch, (*emarginatae*), (Tab. III. Fig. 4.) as in the Thruſh. In the Accipitres, and others which live on hard food, the mandibles are thick; in other Birds thin; and in the Ramphaſtos hollow.

It may be further remarked, that the upper mandible, in the genus *Anas*, is furniſhed at the point with a ſmall nail or *unguis*, (Tab. III. Fig. 5.) the under in many Birds, particularly in thoſe of the genus *Trochilus*, is concave, and in ſome, as in the Diomedea, truncated.

The bill has various names according to its different figure. With regard to its direction, it is either ſtraight, *rectum*; or bent downwards, (*incurvum*); ſeldom upwards, (*recurvum*), (Tab. IV. Fig. 3.) as in the Recurviroſtra. As to ſhape, it is round, (*teres*), as in the Snipe; compreſſed, (*compreſſum*), as in moſt Birds; and in the genus *Alca*, carinated, (*carinatum*), both above and below; flat, (*depreſſum*), as in many of the water Fowl; or cornered, (*angulatum*), as in the Woodpecker; or three ſided, as in the Kingsfiſher; or quadrangular, as in the Buphaga. As to figure, it is conical, as in the Fringilla; awl-ſhaped, (*ſubulatum*), as in the Colymbi; cylindric, as in the Snipe; knife-ſhaped, (*cultratum*), when the margin of the mandible is ſharp, as in the

Crow; or arched, (*fornicatum*), (Plate III. Fig. 2.) as in Poultry; or hooked, (*aduncum*, *uncinatum*), (Plate III. Fig. 3.) as in the Accipitres: In moſt Birds it is pointed, (*acutum*); but in ſome Water Fowl, obtuſe, (*obtuſum*).

§ 150.

In the upper mandible are ſituated the noſtrils, which furniſh generic characters according to their diſpoſition and figure. In the Parrot kind, they are ſituated at the baſe of the bill. In the Ramphaſtos and Alca, behind the bill. In the Cuckoo, they are marginated. In the Procellaria, (Storm-finch), tubular. In the Colymbi, linear; and in the Gallinæ, they are half covered with a membrane.

The baſe of the bill is either ſurrounded with a *Cera*, as in the genus *Falco*, (Plate III .Fig. 3.), or the capiſtrum is bent over it forwards, (*capiſtrum reverſum*), (Plate IV. Fig. 5.), as in Owls; and in ſome, as the Thruſh and Goatſucker, ſtiff hairs ſurround the baſe of the bill, which are called Vibriſſæ. Plate III. Fig. 4.

§ 151.

In the mouth, within the bill, is the tongue, which is either fleſhy, (*carnoſa*), or cartilaginous, (*cartilaginea*), as in the Raven: intire, (*integra*), as in the Parrot; divided, (*bifida*), as in the Accipitres; torn, (*lacera*), as in the Lanius; notched, (*emarginata*), as in the Starling; pointed, (*acuta*), as in the Kingsfiſher; obtuſe, as in the Parrot; fringed, (*ciliata*), with hairs, as in the Anates; feathery, (*pennacea*), as in the Ramphaſtos; or arrow-ſhaped, (*sagittata*), as in the Cuckoo; thread-ſhaped, (*filiformis*), or tubular, (*tubuloſa*), as in the Humming-bird; worm-like, (*lumbriciformis*), as in the Woodpecker: theſe laſt can ſtretch out their tongue far out of the mouth, and therefore the bone of their tongue terminates in two long elaſtic cartilages that riſe behind on the skull, and proceed over it to the fore-head, where they remain fixed.

§ 152.

§ 152.

Some Birds have a tuft or creſt of feathers on the head, (*criſta*), (Plate III. Fig. 5.), which has various names according to its different ſituation and figure. Others have a fleſhy comb, (*caruncula*), and under the throat, wattles, (*palearia*), as in the genus Phaſianus: others have fleſhy tubercles and eminences on the back, eyes, and fore-head. Theſe are conſidered as ornaments, their particular uſe being ſtill unknown. Long feathers reſembling a creſt are likewiſe ſometimes found on the throat, the neck and other parts.

§ 153.

The ſtructure of the body of birds is quite fitted for flight. For this purpoſe the head is ſmall, generally oval, the bill wedge-ſhaped, as if for piercing the air. The neck is long and eaſily moveable in all directions. The body is ſlender, light, ſharp on the under ſide, and flat or round on the back. The ſtructure of the bones is particularly fitted for this purpoſe: for the back bone is not only compoſed of thick, connected, and motionleſs vertebræ; but moſt of the bones are, according to the obſervations of Mr John Hunter, hollow, and contain air. By the firſt of theſe circumſtances the body acquires firmneſs, which is ſtrengthened by the arched or forked clavicles, and by the ribs which are bound together by bony apophyſes: the laſt gives the body a conſiderable degree of levity. To this likewiſe the hollow feathers, and particularly the ſtructure of the lungs, very much contribute. For theſe are not, as in the animals of the Mammalia Claſs, enveloped in a thick membrane, aud hang freely in the thorax; but they are attached to the ribs behind, and their external ſurface is perforated, by which means the air is diſtributed thro' every part of the body, going even into the bones; but chiefly into two large membranous ſacks ſituated in the thorax and in the abdomen, ſo that thereby the whole body is enlarged, and made light and adapted for flight. Moſt birds in flying draw their feet cloſe to the body, and by the mo-

tion of theſe, but particularly by that of the tail, they direct their courſe.

§ 154.

The chief inſtruments of flight are the wings, (*alæ*,) which may be compared to the forefeet of quadrupeds as they reſemble them with reſpect to internal ſtructure. They conſiſt of eleven bones, one in the ſhoulder, *brachium*, two in the arm, *cubitus*, two in the hand, *carpus*, two in the *meta carpus*, to which are attached what may be called a thumb and two fingers, one of which has two articulations.

To theſe bones, which are furniſhed with fleſh and ſkin, the flag-feathers, (*remiges*,) are attached. Of theſe the ten larger, which riſe from the firſt bone, are called the quill feathers, (*Primores*,) thoſe that riſe from the ſecond bone, the *cubitus*, are called *ſecondariæ*, and do not conſiſt of any certain number; they are ſmaller and not ſo ſtrong as the former. On the thumb, or ſmall joint riſing at the end of the *cubitus*, are three ſmall ſtiff feathers, which are called the baſtard wing, (*alula* or *ala ſpuria*). The *brachium* wants the flag feathers and is furniſhed only with ſmall feathers.

Theſe flag feathers incline backwards, and form, when the bird ſtretches them out, ſomething like an arched fan; when the wing is folded, the outer are covered by the inner ones. As theſe feathers often afford certain characters for determining the ſpecies, they are therefore numbered, beginning from the outermoſt and proceeding inwards. In ſome birds the flag-feathers are wanting, (*aves impennes*); theſe cannot fly; becauſe either their body is too large and heavy for flight, as in the Oſtrich; or they conſtantly live in the ſea, except at breeding time, and have received the common name of Penguins; ſuch are the Alca impennis, Diomedea demerſa, Phaeton demerſus.

§ 155.

The flag feathers, as well as the tail-feathers (*rectrices*,) are covered in part by the coverts, (*tectrices*,) which are

are often adorned with very beautiful colours, and are ſometimes of a particular ſtructure. When theſe coverts are marked with a ſpot of lively ſhining colours, which is particularly the caſe in birds of the Duck kind, the ſpot is called *ſpeculum*.

At the extremity of the body there are for the moſt part 12 feathers, *rectrices*. The Gallinæ have 18; others as the Wood-pecker, Cuckoo, Wryneck, Toucan, and Humming bird only 10. They are reckoned from both extremities inwards to the centre, as the correſponding feathers on each ſide are always marked in the ſame way. See Plate III. fig 1.

Some of the Anſeres want the long tail-feathers; if theſe are ſhorter than the feet, the bird is ſaid to be ſhort-tailed, (*avis brachyura*); if longer, long tailed, (*macroura*;) if all the tail feathers are of equal length, the tail is ſaid to be undivided, (*integra*;) if the inner ones are longer than the outer, it is ſaid to be wedge-ſhaped, *cuneata*, as in the Magpie; if the outer are longer than the reſt, as in the Hirundo ruſtica, Chimney Swallow, it is ſaid to be forked, (*forficata*;) if the extreme ones are only a little ſhorter, it is ſaid to be rounded, (*rotundata*). In moſt birds theſe feathers are weak at the end, and the vane is rounded; but in Woodpeckers and the Rice bird, Emberiza oryzivora, they are pointed. When the tail of birds is not expanded, the outer feathers are covered by the inner ones.

§ 156.

The feet of birds (*Pedes*,) conſiſt of three parts, the *femur*, the *tibia* and the *digiti*; the thigh, leg and toes. The thigh is in general fleſhy and covered with feathers; but in the Grallæ it is covered only half way down. In the Fulica, there is, above the knee, a circle of coloured feathers called *armilla*. The *tibia* is cylindrical, ſurrounded with ſinews and ſkin, which is either reticulated before, or divided into parts like ſcales; the former is the caſe with the Anſeres, Grallæ, Accipitres, and Gallinæ, the latter with other birds. The legs are in general bare of

of feathers; in ſome, as the Tetraones, Owls and Eagles, they are feathered. The males of the Gallinæ have in general a ſpur on them, (*calcar*).

The number of the toes is in general four, of which three commonly ſtand forwards and one behind. When theſe are free and unconnected they are called *Pedes ambulatorii*, Pl. IV. fig 5. Sometimes the middle fore-toe is connected with the two ſide ones; (*pedes greſſorii*), Pl. III. fig 6, as in the Kingfiſher; if the back toe is wanting (*pedes curſorii*) Pl. III. fig 7. as in the Buſtard. The Oſtrich has only two fore toes. If there are two toes before and two behind, the feet are called *ſcanſorii*, Pl. III. fig 8. Some birds, as the Owls, which have three fore toes and one back toe, can turn the outermoſt of theſe fore toes either before or behind, (*digitus verſatilis.*) In the *Hirundo Apus*, all the four toes ſtand forward.

In all the kinds hitherto mentioned the toes are quite divided; but there are others where each toe is encircled by a membrane, like a fringe, that is ſometimes ſmooth and has an entire margin, (*pedes lobati*) Pl. III. fig. 10. as in the Colymbus: ſometimes the margin is ſcolloped, as it were, as in the Fulicæ, (*pinnati*) fig. 11. or the fore toes are, from their origin half way, connected by a membrane, (*ſemi palmati*), fig. 12. as in moſt of the Gallinæ, or the membrane or web proceeds to the very point of the three fore toes, and unites them perfectly (*palmati*), fig. 13. as in the Anſeres. In the Pelecanus, the whole four toes are thus connected.

On the toes are ſituated the nails or claws, *ungues*; they are commonly acute, ſeldom obtuſe, as in the Colymbi; in the Accipitres they are crooked, and furniſhed with ſharp margins; in the Heron they are ſerrated.

The ſituation of the feet is in moſt birds ſo placed as to keep the body in the centre of gravity, *pedes æquilibres*; ſome water birds have them ſo near the extremity of the body, that they can only ſwim with them, or walk with difficulty, *pedes compedes*.

On

On theſe feet birds walk either faſter or ſlower, and in various ways; and with theſe they likewiſe ſwim.

§ 157.

The colour of the feathers in many Birds is beyond deſcription beautiful. Nature, who in the economy of Birds, has beſtowed on them ſo many peculiarities, has further departed from her rule in confining the beauty of her colouring to the males; while, in the other animals, the female is the moſt attractive. Colours in general are more vivid and ſplendid in the warm, than in the cold climates. As the Leopard and the Zebra, the moſt beautiful of Quadrupeds, the moſt gorgeous flowers, and the gaudieſt Butterflies, are inhabitants of the torrid zone; ſo there likewiſe are found the Peacock, the Humming-bird, the Parrot, &c. the moſt beautiful of Birds.

§ 158.

The abode of Birds is very various. Every corner of the world is poſſeſſed by them. Many ſpecies are very widely diſperſed. Some are to be found only in particular regions. Parrots live only in the warmer climates. Birds of Paradiſe are found only in the Molucca and neighbouring iſlands.

§ 159.

Many Birds change their place of abode at certain ſeaſons of the year. Some of them remove indeed but a ſhort diſtance, and ſoon return to their accuſtomed haunts. But others take long journies, fly acroſs the ſeas, and paſs the greateſt part of the year in another hemiſphere. Cold, and the want of food, induce them to this migration. During the inclemency of northern winters, when the whole of organized nature appears dead, many ſpecies would die for the want of their natural food, ſuch as inſects, berries, and ſeeds; and the leafleſs trees could then afford them or their young no protection againſt the cold. But inſtinct directs them to fly the approach of froſt, and to take refuge in ſouthern climates, till the return of genial weather recalls them

to

to their native ſpots. In general, they not only reviſit the ſame countries and provinces, but the ſame woods, the ſame villages, and their former neſts. Some Birds, it is ſaid, remain during winter concealed in holes in the earth, or at the bottom of lakes; ſuch as ſome ſpecies of the Swallow.

§ 160.

The ſong of Birds is very remarkable; for although ſome have but a ſingle note, others have a moſt melodious ſong, and are even capable of learning artificial airs. The ſmall Birds, (*Paſſeres*), are the chief ſongſters, and the Nightingale, the Thruſh, the Linnet, and ſome others, are the moſt celebrated. The males always ſing better, as well as louder than the females; and the latter indeed ſeldom ſing at all, except when they are forced to live without a mate: In ſinging, Birds are much aſſiſted by their lungs, which take in a great quantity of air, and enable them to prolong their tones: but the modulation is performed by the Larynx, which is furniſhed with many and very flexible muſcles, with the aſſiſtance of the tongue. This laſt, in the fineſt ſong-Birds, is commonly pointed at the end, and ſet with fibres, or cleft. Various Birds, particularly ſuch as have broad and thick tongues, can imitate human ſpeech; ſuch as Parrots, Magpies, Starlings, &c.

§ 161.

The ſong of Birds is the voice of love; and they never ſing ſo loudly, or ſo unceaſingly, as when in ſpring they ſolicit the favour of a mate; when they contend in rivalſhip for her good graces; or when they cheer her during the fatigues of incubation.

§ 162.

The neſts which the female builds before ſhe lays her eggs, are more or leſs artificial. The males generally aſſiſt the females in this buſineſs, eſpecially among ſuch Birds as pair. They join together in bringing materials to the place; and theſe are ſtraw, leaves, graſs, reeds, earth, moſs, hair, wool, the down of plants and animals, and

and in caſe of neceſſity, many other ſubſtances. Theſe the female weaves ſo artificially together, that the ſofteſt always line the neſt, and form the bottom for the eggs to lie on. The moſt artificial neſts are made by the Oriolus Galbula, Fringilla Spinus, and Parus pendulinus, whoſe neſts are conſtructed of wool and flax, furniſhed with but a ſmall entrance on one ſide, and hung from a ſlender branch, by which means, the eggs and young are protected from birds and beaſts of prey.

The place in which the neſts are built, likewiſe varies according to the manner of life of the Bird. The Eagle, and other birds of that kind, build their neſts on the higheſt cliffs and rocks, that they may thence ſee their prey at a diſtance round them. Others build their neſts in the holes of walls, or in hollow trees; ſuch as thoſe that live on Inſects and Worms, as the Woodpecker, the Hoopoe, &c. Poultry, and birds of the ſame genus, alſo ſome of the Grallæ build their neſt on the ground; the Anſeres among reeds, or on the dry ground on the banks. The Water-hen builds a floating neſt on the water, attached to a few reeds. But neſts, and their ſtructure, are ſo various, that Birds belonging to the ſame genus, build differently.

§ 163.

The number, figure, and colour of the eggs which the females lay and hatch at one time, are very different. The female, in general, performs the whole work of incubation; but, among thoſe birds which pair, the male alſo often aſſiſts, and continues upon the eggs between ſix and eight hours a day, as in Pigeons; or they bring their food to the females, as among Crows. Others protect them at that time with the greateſt anxiety, as the Lanius Tyrannus. The females take remarkable care of their eggs; when they quit them for any time, they cover them with feathers, and other ſuch matters and return with eager ſpeed to the neſt. The Oſtrich and Caſuary bury their eggs in the ſand, truſting, during the day, to the heat of the ſun; but they ſit upon them through the

night. The Cuckoo lays a ſingle egg in the neſt of ſome ſmall Bird which feeds on Inſects, by which it is hatched.

§ 164.

As to the number of the eggs of Birds; ſome lay only one egg, as the genus *Alca*, and all the Eagles. The Colymbi lay two eggs, the Lari three, the Corvi four. The Paſſeres in general, have from five to eight eggs.—The birds of the genus *Tetrao* lay from nine to eighteen eggs.

§ 165.

The old ones protect their young with the greateſt care, and feed them in their helpleſs ſtate; they bring food to the neſt, as all birds do, which build on high places, and carry it in their bills, or in their crops, like Pigeons, and then bring it up again with no little trouble. When the young are newly hatched, they are covered with down; but in a ſhort time the feathers grow, and they are not long in quitting the neſt. In general, they arrive at full ſize and ſtrength during the firſt year; and although Birds come ſo quickly to maturity, they attain a greater age in proportion, than quadrupeds.—Parrots have been known to live for 30 years and more, Pigeons for 22 years, the Goldfinch for 23, the Gooſe for 100 years, and Swans have been ſaid to live for 300 years.

§ 166.

Birds eſcape their enemies by the rapidity of their flight; and thus the ſmall Birds ſecure themſelves againſt the birds of prey. Others diſperſe a diſagreable ſmell, and their fleſh is diſguſting and uneatable, as the Buceros Rhinoceros, and the Gracula foetida. Many defend themſelves with their bill and the ſharp claws on their toes: a few, ſuch as the Buceros and Palamedea, have horns upon their head, which, however, are but inconſiderable weapons; the males of the Gallinæ have ſpurs on their legs, which are very uſeful, as are the ſharp ſpines on the wings, in the Oſtrich, the Charadrius ſpinoſus, Parra, &c.

§ 167.

§ 167.

Moſt Birds have ſomething peculiar in their manner of flying. Kites and Buzzards ſail round in circles, with wings expanded and motionleſs. The Keſtrel often hangs in the air in one place, all the while briſkly agitating his wings. Hen-harriers fly low over heaths or fields of corn. Owls move in a buoyant manner, as if lighter than the air, and wanting ballaſt. Woodpeckers are always riſing or falling in curves, opening and cloſing their wings at every ſtroke. The Gallinæ fly with difficulty, with an impetuous whirring, and in a ſtraight line. Magpies and Jays flutter, with powerleſs wings, and make no diſpatch. Herons ſeem incumbered with too much ſail for their light bodies, but, as they have ſometimes large Fiſhes to carry, their vaſt hollow wings are uſeful. Pigeons, particularly the variety called *Smiters*, have a way of clafhing their wings, the one againſt the other, over their backs, with a loud ſnap: another variety called *Tumblers*, turn themſelves over in the air. The Kingsfiſher darts along like an arrow. The Goatſucker glances in the duſk over the tops of trees like a meteor. Starlings, as it were, ſwim along; while Miſſel-thruſhes uſe a wild and deſultory flight. Swallows ſweep over the ſurface of the ground and water, and diſtinguiſh themſelves by rapid turns and quick evolutions. Swifts daſh round in circles; and the Sand-martin moves with frequent vacillations like a Butterfly. Moſt of the ſmall birds fly by jerks, riſing and falling as they advance. Skylarks riſe and fall perpendicularly as they ſing. Woodlarks hang poiſed in the air. Titlarks riſe and fall in large curves, ſinging in their deſcent. The Whitethroat uſes odd jerks and geſticulations over the tops of hedges and buſhes. Geeſe and Cranes, and moſt wild-fowls, move in figured flights, often changing their poſition. The ſecondary remiges of Tringæ, Wild ducks, and ſome others, are very long, and give their wings, when in motion, an hooked appearance. Dob-chicks, Moor-hens, and Coots fly erect,

with their legs hanging down, and hardly make any diſpatch. The Cormorant flies ſwiftly along the ſurface of the ſea, with its long neck ſtretched ſtraight out before it.

§ 168.

The uſe of Birds in the economy of nature, as well as to man, is very conſiderable. Vultures, Ravens, &c. devour dead carcaſes, which would infect the air. The Picæ, and many of the Paſſeres, feed on all ſorts of inſects and worms, which would otherwiſe multiply exceſſively. The Anſeres and Grallæ diminiſh the number of the watery inhabitants; the Accipitres devour the too numerous ſpecies of birds and ſmall animals; many of the Picæ, Gallinæ, and Paſſeres, feed on the ſuperabundant ſeeds and fruits; they at the ſame time encreaſe the numbers of fiſhes, inſects, and plants, by ſwallowing their eggs and ſeeds, which are not injured by paſſing through their bodies, but are depoſited in places fit for their production and growth.

They exerciſe their functions chiefly during the day; Owls, and the Goatſucker, only in the night.

Though ſome of them appear to be noxious to man, by feeding upon ſeeds and fruits, and on ſerviceable animals, yet experience ſhews us, that the good they do far exceeds the harm; for, in thoſe regions, where ſome ſpecies, ſuch as Crows and Sparrows, have been extirpated, they have been ſucceeded by innumerable inſects infinitely more hurtful.

Beſides, they are uſeful immediately to man, either by their feathers, or the food they preſent to him in their eggs, or their fleſh.

§ 169.

Beſides the books already mentioned on Natural Hiſtory in general, (§29,) the following belong to Ornithology.

Pier. Bellon du Mans, Hiſtoire de la nature des oiſeaux, avec leurs portraits. Paris, 1755, fol.

Uccelleria, overo diſcorſo della natura e proprietà di diverſi uccelli, &c. de Pietro Olina. Rom. 1684, 4to.

Franc.

Franc. Willoughby de Middleton, Ornithologiæ libri tres, per Jo. Raium. Lond. 1676, fol.
Jo. Raii Synpoſis Methodica avium. Lond. 1713, 8vo.
Jo. Leonhard Friſch, Vorſtellung der Voegel in Deutſchland. Berlin, 1733, fol.
A Natural Hiſtory of birds, by Eleazar Albin. Lond. 1738, 1740, 3 vols. 4to.
A natural hiſtory of birds, by George Edwards. Lond. 1743-51, 4 vols. 4to.
Gleanings of Natural Hiſtory, exhibiting figures of Quadrupeds, Birds, Inſects and Plants, by G. Edwards. Lond. 1758-64, 4to.
Cateſby's natural hiſtory of Carolina. See P. 16.
J. T. Klein, Hiſtoriæ avium prodromus. Lubec 1750, 4to.
——— Stemmata avium. Lips. 1759, 4to.
Paul Henr. Ger. Moehring, Avium genera. Auricæ 1752, 8vo.
Briſſonii Ornithologia, ſ. Synopſis methodica ſiſtens avium diviſiones. Paris, 1760, in 6 vols. 4to.
M. T. Brunichii Ornithologia borealis. Hafn. 1764, 8vo.
Jo. Gerini Ornithologia, edente Laurentio de Laurentiis. Florent. 1765, in 6 vols. fol.
Car. Linnæi Fundamenta Ornithologica. Ups. 1765, and in the 7th vol. of Amœn. Acad. P. 107.
Hiſtoire naturelle des Oiſeaux, par M. de Buffon. Paris, 1770, 4to, et ſeq.
Planches d'hiſtoire naturelle, par d' Aubenton.
Chriſtian Sepp, Nederlandſche Vogelen. Amſt. 1770, large folio. Of this work, the following is a tranſlation, with the ſame plates.
Oiſeaux de la Hollande, avec une deſcription de leur maniere de vivre, de leur nature, et de leurs proprietés. Amſt. 1778, large folio.
Storia naturale degli Uccelli trattata con metodo, e adornata con figure intagliate in rame, e miniate al naturale. Firenze, 1773-1776, in 5 vols. fol.
Latham's General Synopſis of Birds, in 7 vols. 4to. Lond. 1789.
The Natural Hiſtory of Birds, in 3 vols. 12mo. Lond. 1792.
Lord's Natural Hiſtory of Britiſh Birds, Lond. 1791, folio.
Lewin's Birds of Great Britain, with their eggs, in 3 vols. 4to. Lond. 1789.
J. Walcott's Synopſis of Britiſh Birds, in 2 vols. 4to. Lond. 1792.
The Hiſtory of Britiſh Birds, with figures engraved on wood, by T. Bewick. Newcaſtle, 1797, 8vo.
T. Hayes. A Natural Hiſtory of Britiſh Birds, with their portraits accurately drawn, and beautifully coloured from nature. Lond. 1775, folio.

Pen-

Pennant's Britiſh Zoology, vols. 1. and 2.
Blaſius Merrem, Avium rariorum, et minus cognitarum icones, et deſcriptiones. Lipſic. 1786, 4to. et ſeq.
Gemeinutzige Naturgeſchichte der Vogel Deutſchlands, 8vo, Leips. 1795.
G. N. Heerkens, Aves Friſicæ, Poema, 8vo. Rotterd. 1787.
Hiſtoire Naturelle des oiſeaux d' Afrique, par Vaillant, folio, 4to. et 8vo. Paris, 1798.
The Genera of Birds, by Thomas Pennant, 8vo. Edin. 1786.

§ 170.

The diviſions of this Claſs are taken chiefly from the manner of life, and a natural reſemblance in the external appearance of the animals, with which, for the moſt part, the ſtructure of the bill agrees. The following is the diviſion of Linnæus.

ORDER I. ACCIPITRES. The bill ſomewhat incurved. The upper mandible, behind the apex dilated on both ſides, or armed with a dent. The noſtrils wide. Feet armed with ſtrong hooked claws.

ORDER II. PICÆ. The bill ſomething in the ſhape of a knife, the back or upper ſurface convex. The feet formed for walking, ſhort, and pretty ſtrong.

ORDER III. ANSERES. The bill ſmooth, covered with an epidermis, and obtuſe at the point. The feet formed for ſwimming, the toes being connected by a membrane. The legs ſhort and compreſſed.

ORDER IV. GRALLÆ. The bill nearly cylindrical. The feet formed for ſtalking; the thighs feathered only half way down.

ORDER V. GALLINÆ. The bill convex. The upper mandible arched, turning over the under one. The noſtrils arched with a cartilagi-

nous

nous membrane. The feet formed for running, the toes being rough underneath.

ORDER VI. PASSERES. The bill conical and ſharp pointed. The feet formed for hopping, weak with divided toes.

§ 171.

The characters of the genera Linnæus takes from the particular ſtructure of the bill, its covering, the tongue, the feet, and ſome other parts.

The ſpecies are characterized according to the number, quality and colours of the flag-feathers, the tail-feathers and coverts; altho' it is often neceſſary to uſe for the ſame purpoſe the colours of the other feathers, which in many birds alter according to their age, ſituation, ſex, and the ſeaſon of the year. In domeſticated birds the colours vary ſo much, that they are altogether uſeleſs in determining ſpecies.

ORDER I. ACCIPITRES.

THIS is a very natural Order, and comprehends all the rapacious Birds, or Birds of prey, having an incurved hooked bill, on the upper mandible of which, on both ſides, is a ſharp projecting tooth or dent, (See Plate III. Fig. 3.) The noſtrils are wide; and in Owls, are covered with feathers. Their feet are ſhort and ſtrong, with 4 toes, of which, 3 are placed forwards, and one behind; rough, with tubercles below, and terminated with ſtrong, crooked, ſharp pointed, and ſharp edged claws. Theſe in ſome are feathered; in others bare. They live on other animals alive or dead, and are, themſelves, not eatable. They generally ſwallow their prey with

with the bones and feathers; they do not, however, digeſt theſe, but diſgorge them again in round balls. They are monogamous; the females are larger and more beautiful than the males, and, in general, lay about 4 eggs.

GEN. I. VULTUR. The bill ſtraight, hooked at the point. The head bare of feathers.

Birds of this genus are diſtinguiſhed from Eagles and Hawks, by being gregarious, by the comparative heavineſs of their flight, and by their living on carrion. The females too, are hardly larger than the males.

1. Vultur *Gryphus*. The Condor. A very large Bird, with a caruncle on the crown of the head, the whole of its length; the throat bare of feathers.

Inhabits South America.

The Condor is the largeſt of flying birds; but its hiſtory is ſtill imperfect; it has received its trivial name from the probability of its having given riſe to the fable of the Griffin. It meaſures eighteen feet from the tips of its expanded wings; and the quills of its flag feathers are as thick as a man's thumb: thus, along with the Patagonians, belying the common opinion, that the animals of the new world are more diminutive than thoſe of the old. It builds on rocks and precipices, and lays two white eggs. It preys on Sheep, Kids, and even Calves; and ſome ſay they have carried off boys ten years old, and that two of them have attacked and devoured a cow.

2. Vultur *Papa*. King of the Vultures. With caruncles upon the noſtrils; the crown of the head and neck bare of feathers.

Inhabits South America, and the iſlands of the Pacific ocean.

This Vulture is of the ſize of a Turkey. He lives upon Serpents, Lizards, Rats, &c. and on dead carcaſes; he has a ſtrong diſagreable ſmell. He flies high.

GEN.

FALCO.

GEN. II. FALCO. Bill hooked, furniſhed with a cere at the baſe; the head covered with feathers; the tongue bifid.

The Birds of this genus are all carnivorous, but they ſeldom feed on carrion, except when preſſed by hunger, which, however, they can endure for a very long time. Their ſight is very acute; and they precipitate themſelves upon their prey with the ſwiftneſs of an arrow. They have ſtrong legs and claws; and the middle toe is ſlightly connected with the outermoſt toe. They are ſo ſtrong, that ſome of them have been known to carry to their young ones, birds nearly as heavy as themſelves, from a diſtance of forty miles and more. The females in general are larger than the males. The genus Falco is divided into four ſections.

1. With very long thighs.
2. The Gypaeti; with the bill hooked at the point, and ſet round with briſtles at the baſe.
3. The Aquilæ, large, with the feet generally feathered.
4. The Falcones, ſmaller, with naked feet.

1. Falco *Albicilla*. The Erne. The cere and feet yellow; the tail feathers white; thoſe in the middle black at the tips.

Inhabits Europe; particularly Scotland. B.

This ſpecies belongs to the ſecond ſection. It is eaſily known from other Eagles by its white tail. It feeds on fiſh as well as on land animals. It never preys near its own neſt, and will carry off a lamb from a diſtance of four miles.

2. Falco *oſſifragus*. The Sea Eagle. The cere yellow; the feet half covered with down; the body of a ruſt colour; the inner vanes of the tail feathers white.

Inhabits Europe and North America. B.

This Bird is frequent in the Orkney Iſlands, in the headlands. It feeds chiefly on Fiſh. It belongs to the third ſection.

3. Falco *Chryſaëtos*. Golden Eagle. The cere yellow; the feet downy, of a ruſty yellow colour; the body

FALCO.

of a dark brown colour, irregularly barred; the tail black, waved with aſh-coloured bars.

Inhabits Europe and Siberia. B.

Golden Eagles are found in the mountains of Wales and Scotland. They feed on lambs, kids, and all kinds of game; and have been known to carry off infants. They live to a great age, ſome having been kept in menageries for upwards of a hundred years; and they can endure hunger for a long time: one in England lived three weeks without any ſuſtenance whatever. In fine weather, this Eagle flies high; on the approach of a ſtorm, it flies nearer the ground.

4. Falco *fulvus*. The Ring-tail Eagle. The cere yellow; the feet downy, and of a ruſty brown colour; the back brown; the tail has a white tranſverſe band.

Inhabits Europe, America, and the north of Aſia. B.

This ſpecies inhabits the Highlands of Scotland, and is called the Black Eagle. It is very deſtructive to Deer, and carries off lambs, pigs, and even children. It builds in precipices and ſea rocks; and the neſt of a pair of them has been in the ſame ſpot, in the Orkney iſlands, beyond the memory of man.

5. Falco *Milvus*. The Kite, or Gled. The cere yellow; the tail forked; the body brown; the head lighter coloured.

Inhabits Europe, Aſia, and Africa. B.

The Kite is known by its flight, which is ſmooth and even, and reſembles a ſailing, or gliding through the air, without the leaſt apparent motion of its wings. It breeds in wooded, mountainous countries, laying two, or at moſt three white eggs, ſpotted with a dirty yellow.

6. Falco *ater*. The black Eagle. With cere and feet yellow; the back, browniſh black; the head, and under parts, whitiſh; the tail forked.

Inhabits Europe. B.

This ſpecies is ſmaller than the preceding; in other reſpects nearly ſimilar.

7. Falco *Haliaëtos*. Bald Buzzard. With cere and feet blue; the body above browniſh; below white; the head whitiſh.

Inhabits Europe, America, and Siberia. B.

This

FALCO.

This bird haunts rivers, lakes, and the ſea-ſhores. It builds its neſt on the ground among reeds, and lays three or four white eggs, rather leſs than thoſe of a hen. It feeds chiefly on fiſh.

8. Falco *Buteo*. The Buzzard. With cere and feet yellow; body brown; the belly pale, with brown ſpots.

Inhabits Europe. B.

The Buzzard preys on birds, reptiles, and ſmall quadrupeds, and likewiſe on inſects. It is our moſt common Hawk. It builds in large woods, generally ſeizing the old neſt of a Crow, which it enlarges, and lines with wool, and other ſoft materials. It is ſluggiſh and inactive, ſitting on the ſame bough for the greateſt part of the day. It varies in its colours.

9. Falco *apivorus*. Honey Buzzard. The cere black, with the feet half naked, and yellow; the head aſh-coloured; tail with an aſh coloured band; white at the tip.

Inhabits Europe. B.

This ſpecies feeds on mice, ſmall birds, reptiles, and inſects; eſpecially bees. It lays two eggs. It runs very ſwiftly, like a hen.

10. Falco *æruginoſus*. Moor Buzzard. The cere greeniſh; body browniſh; crown of the head, throat, axillae, and feet, yellow.

Inhabits Europe. B.

This ſpecies builds in marſhes and heaths, and lives on aquatic birds, fiſh, and rabbits. It lays three eggs. Its feet are longer, and more ſlender, than in other Hawks.

11. Falco *palumbarius*. The Goshawk. The cere black; the feet yellow; the body brown; the tail feathers barred with pale bands; over the eye, a white line.

Inhabits Europe, Tartary, and America. B.

The Goſhawk builds in trees, and is very deſtructive to poultry. It was in high eſteem among Falconers, and was flown at Cranes, Geeſe, Pheaſants, and Partridges.

12. Falco *gentilis*. The Gentil Falcon. The cere and feet yellow; the body aſh-coloured, with brown ſpots; the tail with four blackiſh bands.

FALCO.

Inhabits the Alps of Europe and North America. B.

In the days of Falconry, this ſpecies was in high eſteem as a bold and ſpirited bird. It inhabits the North of Scotland. The King's Falconer was, antiently, obliged to ſupply the Court with Hawks; and to this day, the office is kept up in Scotland; a neſt of young birds being annually preſented by the Falconer to the Barons of Exchequer, who generally give them away in preſents.

13. Falco *peregrinus*. Peregrine Falcon. The cere and feet yellow; body aſh-coloured above, with brownish bands; reddiſh white below, with blackiſh bands; the tail ſpotted with white.

Inhabits Europe, and the North of Aſia and America. B.

This ſpecies is ſtill uſed by the few gentlemen who delight in Falconry. Its flight is amazingly rapid. One that eloped from its maſter, in Angus, in Scotland, on the 24th September, 1772, with four heavy bells on its feet, was killed in the morning of the 26th, at Moſtyn, in Flintſhire.

14. Falco *verſicolor*. Spotted Falcon. The cere yellow; the head and body white above, ſpotted with light reddiſh brown; white below; the breaſt marked with a few ruſty ſpots.

Inhabits England. B.

Two of theſe birds were ſhot near Longnor, in Shropſhire.

15. Falco *griſeus*. Grey Falcon. The cere and feet yellow; the body above, of a dark grey colour; white below, with black oblong ſpots; tail feathers long; the two in the middle, of one colour, the reſt ſpotted.

Inhabits England. B.

A bird of this ſpecies was ſhot at Halifax in 1762.

16. Falco *candicans*. The Gyrfalcon. The cere and feet of a greeniſh aſh-colour; the body white, with brown ſpots.

Inhabits Iceland and Scotland. B.

This bird was in high eſteem when Falconry was in vogue, and uſed for the nobleſt game, ſuch as Cranes and Herons.

17. Falco

FALCO.

17. Falco *Lanarius*. The Lanner. The cere dull yellow; the bill and feet blue; the body underneath, marked with black longitudinal ſpots.

Inhabits Europe. B.

This ſpecies builds in low trees, and is migratory. It has a white line over each eye.

18. Falco *cyaneus*. The Hen-harrier. The cere white; the feet tawny; the body of a hoary blue colour; the edges of the eye-lids yellow, with an arched line ſurrounding the throat.

Inhabits Europe, and Africa. B.

This ſpecies is very deſtructive to young poultry, and to feathered game. It flies near the ground, ſkimming the ſurface in ſearch of prey. It breeds on the ground, and never ſettles on trees.

19. Falco *Pygargus*. The Ring-tail. The cere and feet yellow; the body aſh-coloured; the belly pale, with oblong red ſpots; the orbits of the eyes white.

Inhabits Europe, and the temperate parts of Siberia. B.

This ſpecies flies higher than the preceding, and ſometimes perches upon trees. Its eggs are white, much beſmeared with red.

20. Falco *Tinnunculus*. The Keſtril. The cere and feet yellow; the back red, with black ſpots; the breaſt marked with brown ſtreaks; the tail rounded.

Inhabits Europe and Siberia. B.

This ſpecies is eaſily known by its flight; it ſeems often as if rivetted to one place, attentively looking below for Mice, Larks, &c. It breeds in the hollows of trees, in the holes of high rocks, towers, and ruined buildings; and lays four eggs.

21. Falco *Niſus*. The Sparrow Hawk. The cere green; the feet yellow; the belly white, undulated with grey; the tail with black faſciæ.

Inhabits Europe. B.

This is the moſt pernicious Hawk we have; it makes great havock among Pigeons and ſmall birds. It builds in hollow trees, in the old neſts of Crows, ruins, and high rocks. It lays four eggs. It is eaſily tamed.

22. Falco

FALCO.

22. Falco *Subbuteo.* The Hobby. The cere and feet yellow; the back brown; the neck white; the belly pale, with oblong brown ſpots.

Inhabits Europe and Siberia. B.

This ſpecies chiefly preys on Larks, which it ſo terrifies, that they have been known to take refuge in the boſom of a man. It migrates in October, but breeds in England. It is ſtill uſed abroad in falconry.

23. Falco *Aeſalon.* The Merlin. The cere and feet yellow: the head ruſty; the body above of a bluiſh aſh-colour, with ſpots and ruſty ſtreaks; below of a yellowiſh white, with oblong ſpots.

Inhabits Europe and America. B.

The Merlin does not breed in England, but migrates, and appears again in October. It flies low, but its motions are ſo quick as ſcarcely to be followed by the eye. It was formerly uſed for taking Partridges, which it would kill by a ſingle ſtroke on the neck.

GEN. III. STRIX. Owl. Bill hooked, without a cere. Noſtrils oblong, covered with briſtly recumbent feathers. Head large, with large eyes and ears. The tongue bifid.

Owls are all nocturnal birds, which, when they appear in day-light, are chaced and inſulted with loud cries by ſmall birds, eſpecially Crows. They have large eyes, by which they ſee in the dark; though they do not ſee in very dark nights; and their ſenſe of hearing is very acute, by means of a particular membrane at the opening of the external ear. They can move the outermoſt toe either forwards or backwards. They feed on carrion, and on living ſmall birds, on Hares, Mice, Field-mice, Lizards, &c. In winter, they live retired, and paſs the time in hunger, and ſleep in towers and old walls. In their manner of life, their round head, &c. they reſemble Cats.

The genus is divided into ſections. 1. Thoſe with ears, or feathers ſtanding up like ears. 2. Thoſe without thoſe ears.

1. Strix

STRIX.

1. Strix *Bubo.* Great Horn-owl. The body of a reddiſh colour.

Inhabits Europe and America. B. Plate IV. Fig. 1.2

The Great Owl has been ſhot in England and Scotland. It is equal in ſize to ſome Eagles, and ſuperior to many of them in ſtrength. It haunts inacceſſible rocks, and deſert places; and preys on Hares and feathered game. It can endure the day-light better than moſt of the genus. In the day, its flight is low, but at night, it ſometimes ſoars very high.

2. Strix *Otus.* Horn Owl, or Long-eared Owl. With ſix auricular feathers.

Inhabits Europe, America, and Aſia. B.

This ſpecies is found in the North of England and Wales. It builds in trees, and in the empty neſts of other birds, laying four white eggs in April; it never migrates, and is extremely clamorous.

3. Strix *brachyotos.* Short-eared Owl. With a ſingle ſhort auricular feather; the body brown above; the feathers yellow on the edges; pale yellow below; longitudinally ſtriated.

Inhabits America and Europe. B.

The Short-eared Owl is a bird of paſſage in England, and performs its migrations with the Woodcock. It breeds, however, in the Orkneys, and makes its neſt in the heath. During the day, it lies hid in long graſs; when diſturbed, it ſeldom flies far, but will light, and ſit looking at one. It has not been obſerved to perch on trees. It feeds on Mice, but, at breeding time, will catch chickens, Moor-fowl, and Plovers.

4. Strix *flammea.* White Owl. The body pale yellow, with white ſpots; whitiſh below, with black ſpots.

Inhabits Europe, America, and Aſia. B.

This is the moſt common ſpecies with us. It frequents barns, hay-lofts, and out-houſes; towards twilight, it quits its perch, and beats about the fields in ſearch of Mice, its only food. When a pair of them have young ones, they ſally out alternately in queſt of food for them, and, in general, return every five minutes with a live Mouſe.

5. Strix

STRIX.

5. Strix *ſtridula*. The Screech Owl. The body aſh-coloured; the third flag feather the longeſt.

Inhabits Europe and Tartary. B.

This ſpecies is not ſo nice as the foregoing in its food, as the young will feed on any dead thing.

6. Strix *Ulula*. The body above brown, ſpotted with white; the tail with white linear bands.

Inhabits Europe and America. B.

This ſpecies inhabits woods, where it reſides the whole day; in the night, it is clamorous, and when it hoots, its throat is inflated to the ſize of a Hen's egg. It feeds on Pigeons, Leverets, and Moles, the laſt of which, it ſkins with the greateſt dexterity. It breeds in hollow trees, or ruins, and lays four eggs of a whitiſh colour.

7. Strix *paſſerina*. Little Owl. With white ſpots arranged in five rows on the flag feathers.

Inhabits Europe and North America. B.

This ſmall ſpecies ſcarcely exceeds a Thruſh in ſize. It is made uſe of in Italy to decoy ſmall birds to the lime-twig. It does not breed in England. It preys on Bats, Mice, and Graſs-hoppers, and builds in decayed fir-trees.

GEN. IV. LANIUS. Shrike. The roſtrum nearly ſtraight, with a dent on each ſide near the apex; naked at the baſe; the tongue as if torn at the point.

The birds of this genus form a connecting link between the Accipitres and the Pici. They are carnivorous and bold: and are called Butcher-birds, becauſe they kill ſeveral birds before they begin to feed; they overpower thoſe that greatly exceed them in ſize; and even defend themſelves againſt the larger birds of prey.

1. Lanius *Excubitor*. Greater Butcher-bird. The tail wedge-ſhaped, and white on the edges; the back grey; the wings black, with a white ſpot.

Inhabits Europe and North America. B.

This bird is ſaid to diſcern the approach of a Hawk, and to give warning of it to the ſmaller birds. It builds in mountanous countries on trees; makes its neſt with moſs, dry graſs, and feathers; the female lays from five to eight eggs.

LANIUS.

eggs. The old ones feed their young at firſt with inſects and caterpillars, and retain their affection and care of them even after they are fully grown.

2. Lanius *Collurio*. Leſſer Butcher-bird. The tail ſomewhat wedge-ſhaped; the back hoary; the four innermoſt tail feathers of one colour; the bill of a leaden colour.

Inhabits Europe and Africa. B.

This ſpecies lives on ſmall birds, mice, beetles, and other inſects, which it, in general, ſticks upon the thorns of the Sloe buſh, and tears them in pieces, eating, in preference, the brain. It imitates the ſong of the Paſſeres, ſuch as the Hedge-ſparrow, the Goldfinch, &c. and by this means, intices them within its reach. When tamed, it imitates a great variety of ſounds. It migrates in autumn to warmer regions. It is the only eatable ſpecies of the genus. Its neſt is very artificially conſtructed; the female lays ſix eggs.

3. Lanius *rufus*. The Whinchat.

This is merely a variety of the preceding ſpecies. B.

ORDER II. PICÆ.

THE Birds of this Order, in general, agree with one another in many properties, though there are genera which certainly depart, in ſome degree, from the following characters, which are the diſtinguiſhing marks of the Order. The bill is ſomewhat compreſſed, more or leſs crooked, but always convex. The toes are divided, in ſome made for climbing, *(ſcanſorii)*, in others for ſtepping, *(greſſorii)*. The food of ſome is inſects, worms, the fleſh, and the offal of other animals; in others, it is the ſeeds and juices of plants. At breeding time, they are monogamous, and make their neſts on trees. During incubation, the female is often fed by the male. Some

of them are eatable when young; the feathers of others, in ſome countries, are in requeſt as ornaments.

GEN. V. PSITTACUS. Parrot. The bill hooked; the upper mandible moveable, and furniſhed with a cere. The noſtrils at the baſe of the bill. The tongue fleſhy, obtuſe, and intire. The feet formed for climbing.

This very numerous genus, which contains upwards of 140 ſpecies, is peculiar to the warm regions of both worlds. Though, in the figure of the bill, the birds of this genus exceedingly reſemble the Accipitres; in their manners, they perfectly agree with the other genera of this Order. They feed on the ſeeds and fruits of various plants; they are very docile, and by means of their obtuſe tongue, as Pliny remarks, are able to imitate human ſpeech; they lift their food to their mouth with their feet; they climb eaſily, aſſiſting themſelves, for that purpoſe, with their bill; and are among birds, what Apes are among the Mammalia. They aſſociate in pairs; the male and female alternately ſit upon the eggs; they attain the age of 130 years and upwards. In Europe, they ſometimes lay eggs, but ſeldom ſit on them. Some ſpecies are as large as a domeſtic fowl, while others are no larger than a Sparrow. In their native places, ſome of them are eaten. Alexander the Great firſt brought Parrots into Europe.

The genus is divided into two ſections, viz. 1. Thoſe ſpecies which have long wedge-ſhaped tails, and 2. Thoſe that have ſhort tails, with the feathers of equal length.

1. Pſittacus *Macao*. Red, the quill-feathers blue above, red below; the ſcapulars varied with green and blue; the cheeks naked and wrinkled.

Inhabits South America.

This ſpecies belongs to the firſt ſection. It is as large as a common Hen, and its tail is two feet and a half long. It lives in palm woods, the fruit of which is its chief food. It breeds twice a year in hollows of trees, laying two eggs not larger than thoſe of Pigeons, but coloured like thoſe of Partridges. The young ones are eaſily tamed, not ſo the older ones.

2. Pſittacus

PSITTACUS.

2. Pſittacus *ornatus*. Orange-billed Parrot. Of a yellowiſh green colour; the hind part of the head, the throat and breaſt, red; the crown of the head, and ears blue, with aſh-coloured orbits.

Inhabits India.

This ſpecies is likewiſe of the firſt ſection. It is ſmall, and its colours are exceedingly beautiful. Like other ſmall ſpecies, with long tails, it is not eaſily taught to ſpeak.

3. Pſittacus *criſtatus*. Great white Cockatoo. White, with a folding yellow creſt.

Inhabits the Molucca iſlands.

This and the following ſpecies belong to the 2d ſection. It can erect or depreſs its creſt of feathers at pleaſure. It raiſes it when irritated. It often repeats the word Cockatoo, as do ſeveral other ſpecies, whence that word has become a ſort of generic name for theſe.

4. Pſittacus *erithacus*. Hoary Parrot. Of a blueiſh grey colour; the temples naked and white; the tail ſcarlet.

Inhabits the weſt of Africa.

This ſpecies is one of the ſmalleſt, and eaſily learns to ſpeak.

5. Pſittacus *garrulus*. Ceram Parrot. Red, the orbits aſh-coloured; the cheeks and wings green; the hinder part of the tail-feathers blue.

Inhabits the Molucca iſlands.

Of this, there are ſeveral varieties; all of them very loquacious.

6. Pſittacus *paſſerinus*. Blue and green Parrakeet. Of a yellowiſh green colour; with a blue ſpot on the wings, which are blue below.

Inhabits the Braſils and Guiana.

This ſpecies is the ſmalleſt of the genus, being not larger than a common Sparrow. The bill, cere, orbits, feet, and claws, are orange-coloured.

GEN. VI. RAMPHASTOS. Toucan. The bill large, hollow, convex, and ſerrated at the margins; both

RAMPHASTOS.

mandibles incurved at the apex; the noſtrils ſituated behind the baſe of the bill, long and narrow; the tongue reſembling a feather; the feet, in moſt ſpecies, formed for climbing.

The ſpecies of this genus are all inhabitants of the tropical regions of America, feeding on fruits, and ſometimes on pepper. Their feathers, like thoſe of the former genus, are uſed as ornaments.

1. Ramphaſtos *viridis*. Green Toucan. Of a green colour; the abdomen yellow; the rump red.

Inhabits Cayenne.

The extraordinary large bill, which is yellow, with red ſides, gives this bird a very ſingular appearance

2. Ramphaſtos *Tucanus*. Yellow breaſted Toucan. Of a blackiſh colour; with an abdominal faſcia; the creſt and rump yellow.

Inhabits South America.

This ſpecies is 10 inches long. Its bill is red. Its cheeks, throat, and neck, are orange-coloured.

GEN. VII. BUCEROS. The Hornbill. The bill convex, curved, cultrated, large, and ſerrated at the margins; a large naked bony protuberance on the forehead; the noſtrils ſituated behind the baſe of the bill; the tongue ſhort and ſharp-pointed; the feet formed for ſtepping, (*greſſorii*).

The birds of this genus are all inhabitants of the warmer countries of Aſia and Africa.

1. Buceros *Hydrocorax*. Indian Hornbill. The bony portuberance is flat, without horns projecting forwards; the abdomen tawny.

Inhabits the Molucca iſlands.

This bird feeds chiefly on the nutmeg, and does great injury to the trees which bear that fruit. Its fleſh is conſidered to be delicate eating.

2. Buceros

BUCEROS.

2. Buceros *Rhinoceros*. Horned Indian Raven. The horny proceſs on the upper mandible recurved.

Inhabits India, and the iſlands of the Indian ocean.

This ſpecies feeds on Rats, Mice, fleſh and carrion; accompanying hunters to feed on the offal of their game. It has an offenſive ſmell, and other birds ſhun it.

GEN. VIII. BUPHAGA. Beef-eater. Bill ſtraight, and nearly quadrangular, with intire gibbous mandibles, more gibbous at the margins; feet formed for walking.

Of this genus there is but one ſpecies.

Buphaga *africana*. African Beef-eater.

Inhabits Africa on the river Senegal.

This ſpecies feeds on the larvæ of the Oeſtrus Bovis; it ſits on the backs of cattle, and picks them out with its bill.

GEN. IX. CROTOPHAGA. Ani. The bill compreſſed, ſemiovated, arched, and carinated above; the upper mandible angulated on each ſide at the margin; the noſtrils go from one ſide of the bill to the other.

Crotophaga *Ani*. Leſſer Ani. With feet formed for climbing.

Inhabits South America.

Theſe birds are gregarious; ſometimes 50 of them incubate in one very large neſt. The females, cloſe to one another, twice a year, hatch their eggs, which are of a ſea-green colour. The birds live on fruits, ſeeds, worms, inſects, particularly Graſshoppers; but their moſt favourite food is the Acari Ricini, which infeſt the Oxen, and to get rid of which, theſe laſt are ſaid to lie down, to give the birds an opportunity of picking them from their backs.

GEN. X. GLAUCOPIS. Wattle-bird. The bill incurvated, arched; the lower mandible ſhorteſt, with

GLAUCOPIS.

with a caruncle below at the baſe; the noſtrils depreſſed, and half covered with a membrane nearly cartilaginous; the tongue nearly cartilaginous, cut at the point, and fringed; the feet formed for walking.

Of this genus, there is but one ſpecies.

Glaucopis *cinerea*. Cinereous Wattle-bird.

Inhabits New Zealand.

This Bird ſeldom ſits on trees, but keeps on the ground, living on berries, inſects, and ſmall birds; making a hiſſing and murmuring cry. Its fleſh is excellent.

GEN. XI. CORVUS. Crow. The bill convex and cultrated; the noſtrils covered with ſetaceous recumbent feathers; the tongue bifid and cartilaginous; the feet formed for walking.

The birds of this genus feed on all ſorts of larvæ, inſects, and worms; likewiſe on grain and ſeeds of trees, ſuch as Pines, Oaks, &c. Some of them, when in great numbers, appear to be injurious to man; but their uſe, in diminiſhing noxious vermin, is much more conſiderable.

1. Corvus *Corax*. The Raven. Black, the back of a bluiſh black colour, the tail nearly rounded.

Inhabits Europe, Aſia, and America. B.

The Raven builds in fir trees and rocks; but often deſcends to the plains for food. It feeds on carrion, live birds, weak lambs, but when hungry will eat almoſt any thing; and of all birds has the moſt acute ſmell. It is a very docile bird, and may be taught to ſpeak. The female lays 5 or 6 eggs, on which the male ſits by day and the female by night. In clear weather, they fly in pairs at a great height, making a deep loud noiſe, different from their ordinary croaking.

2. Corvus *Corone*. Carrion Crow. Bluiſh-black, the tail rounded; the tail feathers acute.

Inhabits Europe, Siberia, North America, &c. B.

The Crow builds in woods, on the branches of trees, laying 5 or 6 eggs. It is leſs than the Raven, but ſimilar in its figure

CORVUS.

figure and manners. It lives chiefly on carrion; but attacks the ſmaller animals that are weak and ſickly, and, like the Raven, will pick out the eyes of young lambs. It alſo eats grain and inſects.

3. Corvus *frugilegus*. The Rook. Black, the fore part of the head aſh-coloured; the tail ſomewhat rounded.

Inhabits Europe and the weſtern parts of Siberia. B.

This is the only ſpecies of the genus which is gregarious, and is therefore the Corvus of Virgil. It flies abroad in large flocks chiefly in the morning and evening. It builds in March in tall trees, one bringing materials while its mate watches the neſt, leſt it ſhould be plundered by its neighbours. After the breeding ſeaſon, Rooks foreſake their neſt trees and for ſome time rooſt elſewhere, but return to them in Auguſt: in October they repair their neſts. They feed chiefly on worms, and the larvæ of inſects, but likewiſe eat grain, ſeeds and vegetables, whence they are ſometimes injurious to the farmer; but they amply recompence him by deſtroying the vermin in his fields, by digging for which with their bill, the baſe of it is generally bare of feathers.

4. Corvus *Cornix*. The Hooded Crow. Aſh-coloured; the head, throat, wings, and tail, black.

Inhabits Europe and Aſia. B.

Theſe birds are as deſtructive as the Raven. They not only pick out the eyes of lambs, but of horſes when entangled in bogs. They are a bird of paſſage in England, appearing in the beginning of winter and going away with the Woodcock; but they breed in the weſtern iſlands of Scotland, and never migrate. They meet in flocks in the ſpring, and then ſeparate in pairs. They build in trees and lay 6 eggs.

5. Corvus *Monedula*. The Jackdaw. Of a browniſh black colour; the hind part of the head hoary; the front, wings, and tail, black.

Inhabits Europe, Siberia, &c. B.

Jackdaws build in towers, ſteeples, and high rocks; laying 5 or 6 eggs. They are eaſily tamed and may be taught to ſpeak. They feed on inſects, grain, and ſeeds. They are very loquacious, and when tame they are troubleſome by ſtealing and hiding whatever they can carry away, eſpecially pieces of gold and ſilver.

6. Corvus

CORVUS.

6. Corvus *glandarius*. The Jay. The coverts of the wings blue, with white and black tranſverſe lines; the body variegated with purple and grey.

Inhabits Europe and Siberia. B.

The Jay is one of the moſt beautiful of the Britiſh birds. It builds in hazels, thorns, or low birch, and lays 5 or 6 eggs. The young appear in fourteen days. They follow their parents till the ſpring: in ſummer they are very injurious to gardens by devouring peaſe and cherries: in autumn they feed on acorns, whence their trivial name. They are very docile and may be taught to ſpeak.

7. Corvus *Pica*. The Magpie. Variegated with white and black; the tail wedge-ſhaped.

Inhabits Europe, Aſia, North America, &c. B.

The Magpie is a very miſchievous bird, eſpecially among chickens and ducklings. In general, worms, inſects, and ſmall birds are its food. It is crafty, reſtleſs, and noiſy; it is eaſily tamed, and may be taught to ſpeak. It builds its neſt with great art, covering it entirely with thorns except a ſmall hole for admittance, and lays 6 or 7 eggs.

8. Corvus *Pyrrhocorax*. The Chough. Blackiſh, the bill yellowiſh, the feet black.

Inhabits the Swiſs Alps. B.

This ſpecies lives on ſeeds, and is therefore hurtful to corn. Its fleſh is delicate. It has a harſh diſagreeable note.

9. Corvus *Graculus*. The Corniſh Chough. Blackiſh mixed with a violet colour; the bill and feet red.

Inhabits the Alps of Switzerland, England, Scotland, &c. B.

This bird affects mountainous and rocky ſituations, and builds its neſt in high cliffs, or ruined towers, laying 4 or 5 eggs. It feeds on inſects and newly ſown corn. It is a tender bird; but active, reſtleſs, and thieving; much taken with glitter, and ſo meddling as not to be truſted where things of conſequence lie. It is very apt to ſeize on bits of lighted ſticks, and thus houſes have been ſet on fire by its means.

The Corvus *Caryocatactes* ſometimes accidentally viſits England.

GEN. XII. CORACIAS. The bill cultrated and incurved

CORACIAS

ed at the apex; bare of feathers at the baſe. The tongue cartilaginous and bifid. The feet formed for walking.

1. Coracias *Garrula.* The Roller. Blue, the back red; the flag feathers black.

Inhabits Africa, Syria, Siberia, and Europe.

This bird has been ſhot in England; but is only an accidental viſitant. It is one of the moſt beautiful of European birds. It lives on Frogs, Beetles, acorns, grain, and fruits. It builds in trees, particularly the Birch. Its fleſh is by ſome thought excellent. It is the only European ſpecies of the genus.

GEN. XIII. ORIOLUS. Bill conical, convex, very acute and ſtraight; the upper mandible ſomewhat longer than the under, and ſlightly emarginated; the tongue bifid and acute; the feet formed for walking.

Of this numerous genus, none are natives of Europe but the following ſpecies.

1. Oriolus *Galbula.* Golden Oriole. Yellowiſh; the ſtraps, *(lora)*, wings and tail black; the outermoſt tail-feathers yellowiſh behind.

Inhabits Europe, Aſia, and Africa.

This bird ſometimes accidentally appears in England. It feeds on cherries, grapes, figs, and inſects. Its neſt is conſtructed of leaves in the ſhape of a pitcher, and attached to the ſlender ramifications of the branches of trees, ſo that it ſeems to hang in the air. It lays four or five eggs: its fleſh is eatable.

GEN. XIV. GRACULA. Bill convexly cultrated; ſomewhat bare at the baſe; tongue entire; ſomewhat pointed and fleſhy; feet formed for walking.

This genus comprehends 12 ſpecies, which are all natives of Aſia, Africa, or America; their bills are thick, compreſſed at the ſides, with ſmall noſtrils at the baſe; their claws

GRACULA.

are hooked and ſharp; the middle fore-toe is connected at the baſe with the outer one.

1. Gracula *Quiſcala*. Purple Grakle. Of a purpliſh-black colour; the tail rounded.

Inhabits North America, Jamaica, &c.

This is a migratory bird; it ſings ſweetly; and builds in trees in unfrequented ſituations. It lays five or ſix eggs. When hungry, it eats rice, barley, oats, and wheat; but is fondeſt of mayz, and the Zizania aquatica, on which account, it is perſecuted in Virginia, but unjuſtly; as it deſtroys the Bruchus Piſi, and the worms that infeſt the meadows; for, in 1750, when it was almoſt extirpated from Pennſylvania, the inhabitants found their fields entirely laid waſte by a caterpillar.

GEN. XV. PARADISEA. Bird of Paradiſe. Bill covered with the downy feathers of the capiſtrum; the feathers of the hypochondria long; two tail-feathers above the reſt without vanes.

The birds of this genus live chiefly in New Guinea, migrating in the dry ſeaſon to the neighbouring iſlands, but a few miles diſtant from the Equator. Their noſtrils are ſmall, and covered with feathers; the tail conſiſts of 10 feathers; the two intermediate ones bearded only at the baſe and the point. The feet are large and ſtrong; the middle fore-toe connected with the firſt joint of the outer toe. The Chineſe ſometimes ſell to ſtrangers ſpecimens of theſe birds fabricated of the feathers of Parrots.

1. Paradiſea *apoda*. Greater Bird of Paradiſe. The feathers of the hypochondria longer than the body; the two intermediate tail-feathers long and ſetaceous.

Inhabits the Molucca iſlands, and others in the neighbourhood of New Guinea.

This ſpecies, in the wet ſeaſon, returns to New Guinea, flying in flocks, and ſending a meſſenger before; it cries like the Stare; it is bold, and is uſed as an ornament, and as merchandize in India. The antients believed it had no feet, and hence its trivial name.

GEN.

TROGON.

GEN. XVI. TROGON. Bill ſhorter than the head, cultrated, hooked; the margins of both mandibles ſerrated; the feet formed for climbing.

The birds of this genus are all inhabitants of the tropical regions. They live ſolitary, in the thickeſt receſſes of moiſt woods, ſitting upon their lower branches; they take but a ſhort flight; they feed on inſects; their body is long; their feet ſhort; their tail very long, conſiſting of 12 feathers.

1. Trogon *Curucui*. Red-bellied Curucui. Of a greeniſh gold colour; tawny coloured below; the throat black.

Inhabits New Spain, the Braſils, Peru, &c.

This ſpecies lives ſolitary in the thickeſt woods; it is not to be tamed; it builds in hollow trees, and twice a-year lays three or four eggs, equal in ſize to thoſe of a Pigeon; it feeds its young with worms and inſects.

GEN. XVII. BUCCO. Bill cultrated, compreſſed laterally, the apex emarginated on both ſides, and incurved; the gape reaching below the eyes; the noſtrils covered with recumbent feathers; the feet formed for climbing.

The birds of this genus are all inhabitants of Africa, and the warmer parts of Aſia and America; they are ſtupid; their bills are ſtrong and nearly ſtraight, almoſt covered with briſtles; the tail feathers in general 10.

1. Bucco *Tamatia*. Spotted-bellied Barbet. Of a reddiſh brown colour; below of a reddiſh white, ſpotted with black; the throat orange coloured; a collar going half round the neck.

Inhabits Cayenne and the Braſils.

This is a ſolitary bird; affecting ſequeſtered places, chiefly woods; it lives on inſects; its fleſh is inſipid; its head is very large.

GEN. XVIII. CUCULUS. The bill ſomewhat cylindrical; the noſtrils with a raiſed margin; the

CUCULUS.

tongue flat, entire, and arrow-ſhaped; the feet formed for climbing.

Of this genus there are 48 ſpecies, only one of which is a native of Britain; and, except one or two, none of them are natives of Europe.

1. Cuculus *canorus*. The Cuckoo. The tail rounded and blackiſh, ſpotted with white.

Inhabits Europe and the northern parts of Aſia. B.

A remarkable bird. It is certain that it does not hatch its own egg; but lays it in the neſt of ſome ſmall inſectivorous bird; ſuch as that of a wag-tail, hedge-ſparrow, or yellow hammer, which performs the work of incubation in its ſtead. As the young one grows it either overlays the other birds in the neſt, or puſhes them out. The Cuckoo lives on inſects, ſuch as beetles, ſpiders, dragon-flies, maggots, and alſo on ſeeds and ſmall birds. Its note is well known, and tho' always the ſame, is agreeable to moſt people from its indicating Spring and the finer parts of Summer, that is, from about the middle of April, to the end of June. It is not well known whether it migrates or not.

2. Cuculus *indicator*. Honey-Guide. Of a ruſty grey colour, white below; the eyelids black and bare, a yellow ſpot on the ſhoulders; the tail wedge-ſhaped and brown.

Inhabits the interior of Africa.

This bird is called the Honey-guide, from its aſſiſting by its cry to diſcover to the natives its own favourite food, the hives of the wild bees. This it does particularly in the mornings and in the evenings; and the Hottentots, as well as the Dutch inhabitants, ſeize the opportunity of procuring the wild honey. They attend to the call of the bird, they anſwer it with pipes, while it hovers round and flutters before them, till it guides them to the deſtined place. For its reward, they leave it a ſmall portion of their plunder; but only as much as to whet its appetite for more, that it may direct them to other hives. Theſe birds are ſo valued by the inhabitants of theſe places, that it is a crime to kill them.

GEN. XIX. YUNX. The bill ſomewhat cylindrical and acuminated. The noſtrils concave and naked. The tongue, very long, round and ſlender, pointed at

YUNX.

at the apex. The tail has 10 flexible feathers. The feet formed for climbing.

Yunx *Torquilla.* Wryneck. Variegated with white, grey, black and brown feathers.

Inhabits Europe and Siberia. B.

This bird frequents trees in ſearch of the larvæ of inſects, eſpecially ants. It often turns about its head, whence it has its Engliſh name. It intimates to the ſmaller birds, by a cry, the approach of a Hawk. It is eatable. It builds in hollow trees and lays 8 or 9 eggs. It migrates.

GEN. XX. PICUS. Woodpecker. Bill, many-ſided, ſtraight, wedge-ſhaped at the apex. Noſtrils covered with ſetaceous recumbent feathers. Tongue round, very long and ſlender, boney, with a ſharp, hard, barbed point. Ten hard ſtiff and pointed tail feathers. Feet formed for climbing.

The birds of this genus climb trees, particularly thoſe that are decaying or dead, in ſearch of the inſects and their larvæ which deſtroy the tree within. The bone of their tongue terminates in two long ſlender cartilages, which proceed from below upwards, and from behind forwards, over the whole ſkull, under the ſkin, and are attached to the forehead near the baſe of the bill. By means of theſe elaſtic cartilages the birds of this genus thruſt out their filiform tongue to catch inſects, like the Anteaters or the Chamælion. Their feet are formed for climbing, their tail is fitted for reſiſtance and ſupport, and their ſharp pointed and barbed tongue enables them to extract inſects from their lurking places in trees. They are therefore unjuſtly perſecuted and driven from plantations. They make their neſts in hollows of trees. They have a membranous ſtomach and want the cœcum.

1. Picus *viridis.* Green Woodpecker. Of a green colour; the crown of the head crimſon.

Inhabits Europe. B.

This ſpecies with its bill makes holes in a tree which are exactly round. It feeds oftener on the ground than others of the genus; it lays 5 or 6 eggs. It is very fond of bees; and

PICUS.

and in Switzerland where it is numerous, is very deſtructive to them. It announces the approach of rain by a particular cry. In ſize it is ſomething larger than a Fieldfare; its tongue nearly ſix inches long.

2. Picus *major*. Greater ſpotted Woodpecker. Variegated with black and white; the vent feathers and back part of the head red.

Inhabits North America and Siberia. B.

The bill of this ſpecies is ſhorter in proportion than that of other Woodpeckers. The feathers on the back part of the head are red in the male only.

3. Picus *medius*. Middle ſpotted Woodpecker. Variegated with black and white. The vent feathers and crown of the head red.

Inhabits Europe. B.

This ſpecies is very ſimilar to the former except in ſize, and perhaps is only a variety.

4. Picus *minor*. Leſſer ſpotted Woodpecker. Variegated with black and white. The middle of the crown of the head red, the vent feathers of a brick colour.

Inhabits Europe and Aſia, B.

This is the leaſt ſpecies of the genus; being of the ſize of a ſparrow, and weighing about an ounce; it has all the manners of the reſt, but in this country is not ſo frequently met with.

GEN. XXI. SITTA. Nuthatch. Bill ſubulated, roundiſh, unbent, projecting ſtraight forwards and intire; the upper mandible, ſomewhat longer than the under, compreſſed at the point. Tongue notched, ſhort and horny at the apex. Noſtrils ſmall, covered with vibriſſæ. Feet formed for walking.

The ſpecies of this genus are all foreign except the following.

Sitta *europæa*. European Nuthatch. The tail-feathers black; the four exterior ones with a white ſpot behind the apex.

Inhabits

SITTA.

Inhabits Europe, North America, &c. B.

In figure and manners this bird very much reſembles thoſe of the former genus. Like them it runs up and down the trunks of trees; in winter it draws near to houſes and gardens; it moves its tail like the Wagtail; it is a ſolitary bird; it feeds on Beetles and the larvæ of inſects, which it draws from their lurking places under the bark of trees; it perforates nut-ſhells and eats the kernels; it makes its neſt in the hollow of a tree, ſometimes in one that has been left by a Woodpecker, filling up part of the entrance, if too large, with clay; the female lays 6 or 7 eggs, and is a moſt careful mother; it utters its note in the night.

GEN. XXII. TODUS. Bill ſubulated, and ſomewhat depreſſed, obtuſe, ſtraight, and ſet with ſpreading briſtles at the baſe.

Of this genus there are 16 ſpecies, all of which are natives of the tropical regions; particularly of America.

1. Todus *viridis*. Green Tody. Of a green colour; the breaſt red.

Inhabits the warm regions of America.

This is a very elegant bird; it lives ſolitary, and feeds on the ſofter inſects.

GEN. XXIII. ALCEDO. Kingsfiſher. Bill three-cornered, thick, ſtraight, long, and acuminated; the tongue fleſhy, very ſhort, flat, and acute; feet for the moſt part formed for ſtepping.

The birds of this genus are diſperſed over the whole globe; they live chiefly near waters; they feed on fiſh, which they catch in a very artful manner, and ſwallow whole; they afterwards vomit up the indigeſtible parts; though they have, in general, but ſhort wings, yet they fly ſwiftly; in their colours, the blue predominates; their noſtrils are ſmall, and in moſt ſpecies covered. There are 14 ſpecies.

1. Alcedo *Iſpida*. The common Kingsfiſher. With a ſhort tail; azure above; orange coloured underneath; the lores red.

Inhabits Africa, Aſia, and Europe. B.

This

ALCEDO.

This is the only European ſpecies of the genus, and one of the moſt beautiful of European birds. It frequents the banks of rivers, and feeds on fiſh and water inſects: it balances itſelf at a certain diſtance over the water for a conſiderable ſpace; then darting below the ſurface, brings the prey up in its feet. While it remains ſuſpended in the air, in a bright day, the plumage exhibits a very beautiful variety of the moſt dazzling and brilliant colours. It makes its neſt in holes, in the ſides of the cliffs, which it ſcoops to the depth of three feet; it breeds in February or March, and lays from five to nine eggs. The neſt is very fetid, by reaſon of the remains of the fiſh brought to feed the young. Though this bird is a native of warm countries, yet it is exceedingly patient of cold; and in winter ſits upon the ice. Its ſkin ſtuffed is ſaid to preſerve woolen clothes from the moth.

GEN. XXIV. MEROPS. Bill curved, four-ſided, compreſſed, carinated, and acute; noſtrils ſmall, ſituated at the baſe of the bill.

The birds of this genus are rare in America; they feed on inſects; ſome of them chiefly on Bees and Waſps. In the ſtructure of their neſt, they reſemble the former genus: moſt of them have a harſh diſagreeable voice. There is no Britiſh ſpecies.

1. Merops *Apiaſter*. Bee-eater. The back of a ferruginous colour; the abdomen and tail of bluiſh green; two of the tail feathers longer than the reſt; throat yellowiſh.

Inhabits Europe and Aſia.

This ſpecies feeds on inſects, ſuch as the Cicadæ, gnats, and flies; but particularly bees; for want of theſe, it will live on ſeeds; it is gregarious; it conſtructs its neſt of moſſes, in ſubterraneous caverns near waters; it lays from five to ſeven eggs.

GEN. XXV. UPUPA. Bill arched, long, ſlender, convex, a little compreſſed, and ſomewhat obtuſe; the noſtrils narrow, at the baſe of the bill; tongue obtuſe, intire, three-ſided, and very ſhort; feet formed for walking.

The

UPUPA.

The birds of this genus feed on inſects; they frequent dunghills, and are in general uncleanly.

1. Upupa *Epops*. Hoopoe. With a variegated creſt.
Inhabits Europe, Aſia, and Africa. B.

This ſpecies does not breed in England, nor does it viſit theſe iſlands at ſtated times. It feeds on beetles, ſuch as the Scarabæi, Silphæ, and other inſects, which it digs out of dung. It neſtles in hollow trees, the female laying two eggs in a neſt formed of dung. It is natural to ſuppoſe, therefore, that theſe birds have a diſagreeable ſmell; yet, in ſome parts of Italy, they are eaten. Its creſt it can erect or depreſs at pleaſure. It is eaſily known by its note, which expreſſes its generic name.

GEN. XXVI. CERTHIA. Bill arched, ſlender, nearly triangular, and acute; tongue ſharp pointed; feet formed for walking.

The birds of this genus are ſpread over the whole globe. They live chiefly on inſects; their noſtrils are ſmall; their tail is compoſed of 12 feathers; their feet are large; with a large back toe; their claws are long and hooked; moſt of them have an acute tongue; in ſome, it is flatted at the point, in others, ciliated; in a few, tubular. There are 54 ſpecies, of which only one is a native of Britain.

1. Certhia *familiaris*. Creeper. Hoary; white below; the flag-feathers 10, of a duſky colour, with a white ſpot.
Inhabits Europe and the North of Aſia, and America. B.

This bird creeps up and down the trunks of trees, in ſearch of inſects, on which it feeds. It is very ſmall, being the leaſt of Britiſh birds except the creſted Wren. It breeds in hollow trees, and ſometimes lays twenty eggs.

2. Certhia *muraria*. Wall-creeper. Aſh-coloured, with an orange-coloured ſpot on the wings.
Inhabits the South of Europe.

The Wall-creeper frequents old towers, caſtles, and walls, on which it creeps; it is ſolitary; it migrates in autumn; lives on inſects, particularly ſpiders; its voice is ſharp, and it flies with an irregular and uncertain motion. It makes its neſt ſometimes in the ſkull of a man or other animal. Its manners are otherwiſe ſimilar to thoſe of the former ſpecies.

GEN. XXVII. TROCHILUS. Humming-bird. Bill ſubulated and filiform, tubular at the apex; longer than the head; the upper mandible incloſing the under; tongue filiform and tubular, formed of two united threads; feet formed for walking.

This genus contains the ſmalleſt of birds. They are all natives of America, and except two, of South America. Their feet and bill are weak; their noſtrils minute; their tongue can be darted far out; they are bold and pugnacious; their flight is very rapid; they take their food on the wing, ſucking the honey-juice of flowers; ſometimes likewiſe ſwallowing inſects, the fragments of which have been found in their ſtomachs; the motion of their wings makes a louder noiſe than their voice; they are gregarious; they conſtruct an elegant hemiſpherical neſt of the down of a ſpecies of Thapſus, and ſuſpend it from the branches of trees, where it is hid by the leaves; they lay two white eggs of the ſize of peas, which are hatched by the incubation of the male and the female alternately; the young are attacked by Spiders; they are taken by aſperſing them with water from a ſyphon, for the fineſt ſhot would blow them to pieces: they are ſaid to hybernate. Their colours are ſo brilliant, that neither pencil nor deſcription can do them juſtice. The green, red, and blue of their feathers, is like beaten gold, and, eſpecially in ſunſhine, has the moſt brilliant effect.

The genus contains 66 ſpecies, and is divided into two ſections, the curved-billed, and the ſtraight-billed ſpecies.

1. Trochilus *Colubris*. Red-throated Humming bird. Of a golden green colour; the tail-feathers black; the three outermoſt ferruginous, and white at the points; the throat ruby-coloured.

Inhabits America.

This is the moſt common Humming-bird. It migrates as far north as Canada; but, on the approach of winter, returns to the ſouthward.

2. Trochilus *minimus*. Leaſt Humming-bird. The two outermoſt tail-feathers white on their exterior margin; the body of a ſhining green colour; whitiſh below.

Inhabits

TROCHILUS.

Inhabits South America, and the neighbouring iſlands. This is the ſmalleſt of known birds, weighing, at an average about 20 grains. Its neſt is made of the down of plants, and is about the ſize of a walnut; its eggs are no bigger than a pea.

ORDER III. ANSERES.

THE birds of this Order are furniſhed with feet formed for ſwimming, (Plate III. Fig. 10, 11, 13.) and their chief abode is in the water: the bill, in ſome, is obtuſe, and furniſhed internally with a tooth-like cartilage; others want that cartilage, and the bill is pointed; but in all, it is covered with a particular epidermis, (Plate III. Fig. 5.) The tongue is fleſhy, and the mouth rough and prickly. Their feet and legs are ſhort, hidden under the feathers, and placed more behind than in other birds, a ſituation, which is as favourable for ſwimming, as it is inconvenient for walking. Their toes are ſhort, and generally compreſſed, ſo that they eaſily cleave the water, and by means of their membranes or webs, form broad oars. Their plumage is thicker, cloſer, and better furniſhed with down than that of other birds. The gland which all birds have at the rump, and from which they expreſs an oily matter to preſerve their feathers moiſt, is moſt conſiderable in theſe, and makes their plumage impermeable to water. They feed on fiſh, aquatic animals, and plants. They live, for the moſt part, in polygamy, and make their neſts among reeds, or in moiſt places. The young are ſoon able to ſeek their own food, yet the mother leads and protects them for ſome time; the male often kills them. In general they lay a great many eggs,

by which their utility to us is encreaſed; the fleſh of many is eatable; in ſome it taſtes ſtrongly of oil; their feathers are valuable.

GEN. XXVIII. ANAS. Bill lamellated, with a dent at the point, convex, and obtuſe; tongue ciliated and obtuſe.

This is a very numerous genus, and comprehends Swans, Geeſe, and Ducks: it is divided into two ſections. 1. Thoſe whoſe bill is gibbous at the baſe, and 2. Thoſe whoſe bills are ſmooth and equal at the baſe.

1. Anas *Cygnus*. Wild Swan. Bill ſemicylindrical and black; with a yellow cere; the body white.

Inhabits Europe, the northern parts of America and Aſia, &c. B.

This ſpecies is gregarious; its flight is lofty, with a high ſounding voice, the emblem of poets; it runs very ſwiftly; ſwims with its neck erect. It lays four eggs, which are good to eat, as is the fleſh of the young. The inhabitants of Kamtſchatka and Iceland take it with the aſſiſtance of Dogs; and they alſo, like the natives of North America, wear its feathers as ornaments, and uſe its ſkin for cloathes, pouches, &c. It feeds on frogs and water plants, &c. It winters in the Orkney iſlands, arriving from the North in flocks. When it goes away early, the inhabitants expect a mild ſpring.

2. Anas *Olor*. Tame Swan. Bill ſemicylindrical, and black; with a black cere; the body white.

Inhabits Ruſſia, Siberia, Perſia, &c. B.

This ſpecies is a good deal larger than the former; it ſwims with its neck bent; it is mute, ſtrong, long-lived, feeds on fiſh and water plants; makes a neſt of graſs among reeds, and about the beginning of February lays one egg every ſecond day to the number of ſix or eight, and ſits on them for ſix weeks: the fleſh of the young was antiently conſidered as a delicacy.

3. Anas *Tadorna*. Shieldrake. Bill turning up at the point; forehead compreſſed; head greeniſh black; body white and variegated.

Inhabits Europe and Aſia. B.

This ſpecies feeds on fiſhes, inſects, ſhell-fiſh, and graſs; builds

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builds in Rabbit-holes; and ſometimes makes holes of its own. The female lays fifteen or ſixteen white, roundiſh eggs, which are good to eat; ſhe covers them with her own down, and ſits upon them for thirty days. It is ſometimes tamed, but more on account of its beauty than its uſefulneſs.

4. Anas *fuſca*. Velvet Duck. Blackiſh; the under eye lid, and the ſpeculum of the wings white.

Inhabits the northern ocean. B.

In winter, this ſpecies migrates a little to the ſouthward; it lives on fuci and ſhell-fiſh. It makes its neſt of graſs, and lays from four to ten white eggs. The catching of this ſpecies is a favourite diverſion of the Tunguſi who dwell on the river Ochota, eſpecially at the moulting ſeaſon; when they chaſe great numbers of the birds into ſhallow water, and then knock them down with clubs, as at that time they cannot fly. They take many of them alive, and thruſting a needle through their eyes, they carry 50, or even 100 in this way, upon a ſtring; and, it is ſaid, the birds thus uſed, will live for two, or even three days.

5. Anas *nigra*. Scoter. Body wholly black.

Inhabits North America, Europe, and Aſia. B.

This is the bird called *Macreuſe* by the French; its fleſh taſtes ſo much of fiſh, that it is allowed by the Romiſh church to be eaten in Lent. It is a great diver, and is ſaid to live almoſt conſtantly at ſea. Theſe birds appear on the Britiſh coaſts in great numbers in winter, living chiefly on ſhell-fiſh, the fragments of which they throw up again; in ſpring, they retire northward to breed. This ſpecies wants the horny-nail at the end of the bill, which is common to the reſt of the genus.

6. Anas *albifrons*. White-fronted Gooſe. Of a brownish colour; white below, ſpotted with black; the forehead and rump white; the bill and feet yellow.

Inhabits the north of Europe, Aſia, and America. B.

This ſpecies viſits the fens, and other parts of England, during winter, in ſmall flocks; it keeps always in marſhy places, and never frequents the Corn Lands. It diſappears in the earlieſt ſpring, and none are ſeen after the middle of March.

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The foregoing ſpecies belong to the firſt ſection: the following to the ſecond.

7. Anas *Marila*. Scaup Duck. Black; the ſcapulars marked with waving bars of grey; the abdomen and ſpeculum of the wings white.

Inhabits the northern parts of America, Europe, and Aſia. B.

The Scaup Duck varies exceedingly in its colours. It is ſomewhat leſs than the common Duck. In October it begins to migrate ſouthward in flocks; it lives frequently in holes under ground; and feeds chiefly on ſhell-fiſh.

8. Anas *Anſer*. Wild Gooſe. The bill ſemicylindrical; the body aſh-coloured above, paler below; the neck ſtriated.

Inhabits the north of Europe, America, and Aſia. B.

The wild Gooſe is the origin of the tame Gooſe. It breeds in Britain, laying eight or nine eggs, which they hatch in 28 or 30 days; the young are ſaid to excel the young of the common kind as food. They frequent the lakes and rivers; and live to a great age. In winter, they collect in great flocks, and migrate ſomething ſouthward; but never leave the iſland.

The domeſtic Gooſe is well known: it is bred in vaſt multitudes in the fens of Lincolnſhire, for its fleſh and its feathers. The Geeſe there, are attended by a perſon called a Gozzard, i. e. Gooſe-herd, who drives them to feed, and to water. They are plucked five times a year, once for quills and feathers, and four times for feathers only. If the ſeaſon is cold, numbers of them die by by this cruel operation.

Tame Geeſe have been known to live for 80 years. They generally retain the white rump and vent feathers of their original ſtock. They feed on water inſects, worms, and plants, and by means of two rows of ſtrong ſharp teeth within their bills, they crop the herbage in meadows, and do much injury to young corn.

9. Anas *Segetum*. Bean Gooſe. Aſh-coloured; of a dirty white below; the bill compreſſed at the baſe; the coverts of the tail white; the feet ſaffron-coloured.

Inhabits Hudſon's bay, and the Hebrides. B.

Theſe birds breed in the Hebrides, and migrate to England in autumn; they leave it again in May, and in their paſſage

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paſſage light on the corn fields, and feed on the green wheat. In their migration, they fly at a great height, cackling as they go. They preſerve great regularity in their motions, ſometimes forming a ſtraight line, and ſometimes the form of a wedge.

10. Anas *erythropus*. Bernacle. Aſh-coloured; the forehead white.

Inhabits Hudſon's bay, and the north of Europe. B.

The Bernacles, appear in vaſt flocks during winter, on the north-weſt coaſts of this kingdom; they are very wild and ſhy; but on being taken, grow quite familiar in a few days. In February, they quit our ſhores, and retire as far as Lapland, Greenland, and even Spitzbergen, to breed. They have been known to live for 32 years. This is the bird that was formerly ſaid to be produced from the Bernacle ſhell-fiſh, (Lepas anatifera). See Plate X. Fig. 3.

11. Anas *Bernicla*. The Brent Gooſe. Browniſh; the head, neck, and breaſt black, with two white ſpots on the neck.

Inhabits the northern ſhores of Europe, Aſia, and America. B.

Theſe Geeſe migrate in ſummer; in autumn, they return ſouthward, flying high in large flocks, and preſerving the figure of a wedge. They feed on the Polyganum viviparum, the Empetrum nigrum, and other plants; but chiefly on aquatic plants and marine vermes. They are of the ſize of the former ſpecies. They are conſidered to be delicate eating.

12. Anas *molliſſima*. Eider Duck. The bill cylindrical, with a bifid and rough cere, at the baſe.

Inhabits the northern ſhores of America, Europe, and Aſia. B.

This is the ſpecies which yields the famous and coſtly Eider down. It is double the ſize of the common Duck. It feeds on ſhell-fiſh. It lays five greeniſh gloſſy eggs; its neſt is made among the ſtones or plants near the ſhore; its baſe is of rude materials, but it is thickly lined with down, which the female plucks from her own breaſt. The Eider down is obtained by robbing the neſts, which the female again ſupplies; if the neſt is once more robbed, the male ſupplies the down. This ſubſtance is exceedingly warm, light, and elaſtic. It unites ſo much heat with ſo little weight, that five pounds

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pounds of it are ſufficient for the ſtuffing of a coverlet, which may be uſed inſtead of blankets by perſons who are not able to bear their weight.

13. Anas *moschata.* Muſcovy Duck. The face naked with red caruncles.

Inhabits the Braſils.

This ſpecies is domeſticated in Britain, where it is called the Muſcovy Duck, not becauſe it is a native of Muſcovy, but becauſe it ſmells pretty ſtrongly of muſk. When wild it builds in the trunks of trees; it is eaſily tamed; it breeds with the common Duck, and its fleſh is eſteemed.

14. Anas *clypeata.* The Shoveller. The extremity of the bill dilated and rounded, its unguis incurved.

Inhabits Europe, North America and Aſia. B.

This is one of the moſt beautiful of the genus. It feeds on inſects and frogs; it preys by night, and ſees well in the twilight. It remains with us all the year.

15 Anas *rubens.* Red-breaſted Shoveller. Of a brownish colour, the throat and breaſt of a reddiſh brown; the tips of the wings grey, the ſpeculum purple, edged with white; the tail ſhort and white.

Inhabits the fens of Lincolnſhire. B.

This is but an uncommon bird, even in Lincolnſhire; and its hiſtory and manners are unknown, though they probably agree with thoſe of the preceding ſpecies.

16 Anas *ſtrepera.* The Gadwall or Gray. With a red, a black, and a white ſpeculum.

Inhabits Europe and Aſia. B.

Of the ſize of a Wigeon. This ſpecies hides itſelf among the reeds in the day time and comes abroad to feed in the evenings and mornings. Its voice reſembles that of the common duck but is louder; it dives quickly; its fleſh is ſavoury.

17. Anas *Clangula.* The Golden-eye. Black and white, the head tumid and of a violet colour, a white ſpot on each ſide of the mouth.

Inhabits Europe and North America. B.

This ſpecies is very voracious, and is a remarkably quick diver in ſearch of ſhell-fiſh, but it eats likewiſe fiſh, frogs and even mice. It builds in trees a neſt conſtructed of graſs, and

lays

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lays from 7 to 10 white eggs; its fleſh is good to eat. It frequents freſh waters as well as the ſea.

18. Anas *Glaucion*. The Morillon. The body blackiſh, the breaſt clouded, the ſpeculum white and linear.

Inhabits the North of Europe and Aſia. B.

This ſpecies is ſomewhat ſmaller than the preceding. It chiefly frequents the ſea coaſts.

19. Anas *glocitans*. Bimaculated Duck. Head white with black ſtripes; a hooked ſpace on each ſide of a ſilky-green colour, the back of the neck purple.

Inhabits Siberia. B.

This bird is not common in England. It clucks like a hen.

20. Anas Penelope. The Wigeon. With an acute tail, the vent feathers black, the head bay, the forehead white, the back waved with black and white.

Inhabits the ſeas and lakes of Europe, Aſia and Egypt.

The Wigeon is ſomewhat leſs than the common Duck. It is remarkable for uttering a whiſtling or piping noiſe, which is frequently heard as it flies during the night. When young it is grey and a very plain bird; but when old it is dreſſed in very vivid colours, eſpecially the male. It lives upon frogs, worms, inſects and water-plants. The Wigeon migrates from England northward for the purpoſes of breeding, and returns again in November. It is ſometimes domeſticated.

21. Anas *acuta*. The Pin-tail. The tail long, acuminated, and black below, the hind head with a white line on each ſide, the back waved with white and duſky lines.

Inhabits America, Europe and Aſia. B.

This ſpecies is of the ſize of the common Duck. It is found in Ireland in February only. Its fleſh is tender and delicate.

22. Anas *ferruginea*. Ferruginous Duck. Of a reddiſh brown colour; the bill dilated and rounded at the point; the feet pale blue.

ANAS.

Inhabits Denmark and Sweden. B.

This ſpecies is not frequent in England. It had not been ſeen by Linnæus at the time of the publication of his Fauna Suecica, laſt edition; his deſcription was taken from a painting by Rudbeck.

23. Anas *glacialis*. Long tailed Duck. Tail long and acuminated; the body black, white below.

Inhabits Europe, Aſia and North America. B.

It is doubtful whether this ſpecies be not a variety of the Anas *hiemalis*, as it inhabits the ſame places, migrates in the ſame way, and agrees with it in manners and even in voice and appearance. It is only a tranſient viſitor in England. It ſwims and dives remarkably well, flies ſwiftly for a ſhort way, feeds on the ſmaller ſhell-fiſh, ſcreaming loudly; it lays 5 eggs in a neſt made among the graſs by the ſhore, of the ſize of a hen's egg, and protects them with down plucked from its breaſt like the Elder. It is of the ſize of a Wigeon.

24. Anas *ferina*. The Pochard. Grey, with black lines; the head of a bay colour, the breaſt ſtreaked, the vent-feathers and rump black.

Inhabits America, Europe, and Aſia. B.

This is one of the moſt delicate and moſt coveted for the table of the genus. It migrates during winter ſouthward as far as Egypt. It is of the ſize of a Wigeon; it makes a hiſſing noiſe; flies very ſwiftly; feeds on the ſmall ſpecies of fiſh, and on ſhell-fiſh. In the London markets they are called Dun-birds.

25. Anas *Querquedula*. The Garganey. With a green ſpot on the wings, and a white line above the eyes.

Inhabits Aſia and Europe. B.

This ſpecies is in ſome places called the Summer Teal. It frequents only the freſh waters, feeding on ſeeds and aquatic plants, and migrates ſouthward in winter to breed, being very impatient of cold.

26. Anas *Crecca*. The Teal. The ſpeculum of the wings green, a white line both above and below the eyes.

Inhabits Europe and China. B.

ANAS.

The Teal feeds on the graſs of pools, on the ſeeds of junci and ſmall fiſhes; it is ſmaller than the wild duck; it builds its neſt in the corners of ponds, among reeds, forming it of the tender ſtalks of theſe and of feathers, and allowing it to float on the water. It lays from 13 to 17 eggs, of a dirty white colour, marked with ſmall brown ſpots, of the ſize of thoſe of a pigeon. Its fleſh is very delicate.

27. Anas *domeſtica*. Tame Duck. Of various colours, the intermediate tail feathers, (of the male) recurved; the bill ſtraight.

Inhabits Europe, Aſia and America. B.

This bird is ſo well known, that it is needleſs to ſay any thing further of it than that it is generally ſuppoſed to be the ſame ſpecies with the following, but in a domeſticated ſtate.

28. Anas *Boſchas*. Wild Duck. Aſh-coloured; the intermediate tail-feathers (of the male) recurved; the bill ſtraight, with a white ring round the neck.

Inhabits Europe, Aſia and America. B.

The Wild Duck frequents ſtagnant waters where it feeds on frogs, ſnails, gnats, the Lemna, &c. it builds its neſt not always near waters but ſometimes in high trees; it lays from 10 to 15 eggs, and pairs in the Spring. Its fleſh is more tender but not ſo well taſted as that of the tame kind. It is taken in great numbers in the fens of Lincolnſhire. In Sclavonia there are not fewer taken than a million annually. In young Ducks it is ſix weeks before the feathers of the wings make any appearance, and it is near three months before they are able to fly; but the mother leads them to the water the very day after their leaving the ſhell, and they ſwim with eaſe and confidence.

29. Anas *Fuligala*. Tufted Duck. With a hanging creſt; the body black, the belly and ſpeculum of the wings white.

Inhabits Europe and the North of Aſia. B.

This ſpecies on account of its beauty is ſometimes kept and bred inſtead of the common duck. The young are of a brown colour; and it is not till the ſecond year that they acquire their beautiful plumage. The males only have a creſt. They live not only in freſh waters but in the ſea, and dive well, feeding on ſmall fiſhes, crabs, and ſhell-fiſh, and likewiſe

on

MERGUS.

on the ſeeds of aquatic plants, particularly thoſe of the common ruſh.

GEN. XXIX. MERGUS. The bill denticulated, cylindrically ſubulated, bent at the point.

The birds of this genus live entirely on fiſh, and do great miſchief in ponds.

1. Mergus *Merganſer*. The Goofander. With a longitudinal creſt, ſomewhat erect; the breaſt white without ſpots; the tail-feathers aſh-coloured, the ſhaft black.

Inhabits America, Europe and Aſia. B.

This bird ſometimes builds in trees, ſometimes among ſtones; it lays 14 eggs; it is infeſted by the Weaſel which preys on it and its eggs; it lives on fiſh; its fleſh is rancid and ſcarcely eatable. It is of a middle ſize between a duck and a gooſe. When it ſwims, its whole body is under water, the head only above; it dives deep, remains a long time below, and riſes at a conſiderable diſtance; tho' its wings are ſhort, its flight is pretty rapid. In ſome parts of Ruſſia, the ſkin of the belly of theſe birds is uſed as cloathing.

2. Mergus *Caſtor*. Dun Diver. The head creſted and aſh-coloured, ferruginous below, the throat white, the bill and feet blackiſh.

This, which was formerly conſidered as a diſtinct ſpecies, and by ſome the female of the preceding, is now acknowledged to be a variety only, perhaps younger.

3. Mergus *Serrator*. Red-breaſted Merganſer. With a pendent creſt, the breaſt reddiſh and variegated, the fore part of the neck white, the tail-feathers brown, variegated with aſh colour.

Inhabits Germany, and the more northern parts of Europe and Aſia. B.

This is a gregarious ſpecies; it dives remarkably; it builds on dry land, making its neſt of withered graſs and down torn from its breaſt; it lays from 8 to 13 white eggs, equal in ſize to thoſe of a duck. It breeds in the north of Scotland.

4. Mergus *Albellus*. The Smew. With a pendent creſt, the

MERGUS.

the hind part of the head black, the body white, the back and temples black, the wings variegated.

Inhabits the northern parts of Europe and America. B.

There are two varieties of this ſpecies; or rather two birds are deſcribed by authors, one of which is the male, called the Smew or White Nun, the other, called the Red-headed Smew, is the female. It breeds in the arctic regions.

5. Mergus *minutus*. Lough Diver. The head grey, without a creſt; between the bill and the eyes a black band, a white ſpot under the eyes.

Inhabits Europe. B.

This ſpecies is ſeen in Britain only in winter; in ſummer it retires northward to breed.

GEN. XXX. ALCA. Bill without teeth, ſhort, compreſſed, convex, and often tranſverſely ſulcated; the under mandible gibbous before the baſe. The noſtrils behind the bill. The feet (in moſt) three toed.

The birds of this genus are moſtly inhabitants of the northern ocean. They are fooliſh birds; they breed in holes, which they themſelves often dig, and in caverns and fiſſures of rocks; where they reſt during the night; they lay but one egg, which is very large, conſidering the ſize of the bird. In colour they are generally uniform, being black above and white below. They are ſhaped like a duck, their feet are placed behind the centre of gravity: their bills are large, having the ſurfaces croſſed with furrows, and ending in an acute point.

1. Alca *arctica*. The Puffin. The bill compreſſed, triangular, with a ſharp ridge above, ſulcated with 4 furrows; the orbits of the eyes and the temples white, the upper eye-lid with a pointed callus.

Inhabits the northern ocean. B.

The feet of this ſpecies are placed far behind ſo as to permit it to walk with difficulty: it feeds on ſmall fiſh, ſuch as ſprats, on the ſmaller crabs and on fuci; it ſeizes on the holes of rabbits, where it breeds once a year, laying one large white egg, which is oblong, heavy, and good to eat; this egg the male likewiſe aſſiſts to hatch; its fleſh is rancid; but that of the young when properly dreſſed is eatable. The inhabitants of the Kurile iſles, and of the other iſles lying between theſe and America, wear the bills of this bird as ornaments; and th

ALCA.

the natives of Oonalaſchka uſe its ſkin for cloathing. Its bill is remarkably large for the ſize of the bird.

About the 5th or 10th of April, theſe birds appear on ſeveral parts of the ſhores of Great Britain in amazing multitudes for the purpoſe of breeding. The firſt young are hatched about the beginning of July, and for theſe the old ones ſhew the moſt wonderful affection; no danger to themſelves will force them to abandon their unfledged young one: but this affection yields to the paramount neceſſity of migration, which begins about the 11th of Auguſt, and is complete on the 23d of the ſame month; when ſuch young as cannot fly are left to the mercy of the Peregrine Falcon, who watches at the mouth of the holes for the appearance of the little deſerted Puffins, forced by hunger to come abroad.

2. Alca *impennis*. Great Auk. The bill compreſſed, triangular and ſulcated, with an oval ſpot on each ſide before the eyes.

Inhabits the northern ocean of Europe and America. B.

This ſpecies is as large as a gooſe; it is very much allied to the Penguin: a timorous bird, incapable of flying, and even almoſt of walking, but it dives with great facility; it lives on the Cyclopteri and ſuch like fiſhes, and upon the roots of the Rhodiola roſea: it lays one large egg, which is white with purple ſpots, and ſix inches long. It breeds on the iſland of St Kilda, appearing about the beginning of May, and retiring about the middle of June. It lays its egg cloſe to the ſea-mark, not being able on account of the ſhortneſs of its wings to mount higher. If its egg be taken away it does not lay another that ſeaſon.

3. Alca *Pica*. Black-billed Auk. Bill without ſulci and compreſſed; the whole under part of the body and the tips of the hinder flag-feathers white; the feet red.

Inhabits the northern parts of Europe. B.

This ſpecies lives on the Cancer pedatus and other marine inſects and Vermes. It is gregarious, ſeeking its food in winter on the ſhores, and at night returning to ſea: a moſt uſeful bird to the Greenlanders; its fleſh, when half putrid, and its inteſtines, are one of their great delicacies; its raw fat they uſe as food, and its ſkin as cloathing.

4. Alca *Torda*. The Razor-bill. The bill with four ſulci,

ALCA.

ſulci, a white line on each ſide between the eyes and the bill.

Inhabits the northern ocean of Europe, Aſia, and America. B.

The Razor-bill breeds in ſome places of England, and in the Hebrides. It inhabits the ledges of the higheſt rocks that impend over the ſea. It appears in February, but does not ſettle to breed till the beginning of May. It makes no neſt, but lays its egg on the ſhelf of a bare rock poiſing it ſo nicely, that if once removed, it is difficult, if not impoſſible, to fix it again in the ſame place; the egg is large for the ſize of the bird. While hatching, theſe birds ſit cloſe together in vaſt numbers, and in rows one above another, the male and female doing the duty alternately. They walk erect.

5. Alca *Alce*. The Little Auk. The bill without ſulci and conical; the whole abdomen and the tips of the flag-feathers white; the feet black.

Inhabits the northern ocean of America and Europe. B.

This bird is ſometimes found on pieces of floating ice. It reſembles the reſt of the genus in the ſituation of the feet, in its neſt, food, and manners; it walks however ſomewhat better; and lays two eggs of the ſize of a pigeon's; it flies quickly and dives well, growing fat in ſtormy weather.

GEN. XXXI. APTENODYTES. Bill ſtraight, ſmooth, ſomewhat compreſſed and cultrated; the upper mandible longitudinally and obliquely ſulcated; the under one truncated at the point. The feet placed behind and palmated; the wings like fins, without flag-feathers.

The Aptenodytæ reſemble the birds of the preceding genus in colour, food, habit, and ſtupidity, in the ſituation of their feet, in their erect walk, in their neſts, and in their eggs; they differ from them, however, in this, that they are all inhabitants of the South Seas, from the equator to the antartic circle. They are quite incapable of flying, the feathers on their wings being ſo ſhort as to reſemble ſcales; their feet have 4 toes; the ſtructure of their other feathers is different, being ſhorter, and reſiſting for a longer time the penetrating

APTENODYTES.

penetrating quality of the water; they are fortified againſt cold by an abundance of fat; they ſwim very ſwiftly; on land they ſit in a ſingular manner, in vaſt multitudes, erect: they hatch ſtanding; they cackle like geeſe only in a hoarſer tone: their noſtrils are linear and hidden in a ſulcus of the bill; their palate and tongue are ſet with rows of conical villi turning backwards; their body is fleſhy, their wings covered with a ſtrong dilated membrane; their tail is wedge-ſhaped and ſhort, their tail-feathers very rigid.

1. Aptenodytes *patachonica*. Patagonian Pinguin. Bill and feet black; a golden coloured ſpot at the ears.

Inhabits the ſhores in the Straits of Magellan, the Falkland iſlands, New Guinea, &c.

This bird is ſometimes found in immenſe flocks. It is the largeſt and fatteſt of the genus. It feeds on fiſh, ſhell-fiſh, cruſtaceous animals, and molluſca. Its fleſh is very black, but not unpleaſant to the taſte.

2. Aptenodytes *antarctica*. Antarctic Pinguin. Bill black, feet ruddy, with a black line at the throat.

Inhabits the ice mountains and iſlands of the Southern ocean.

This ſpecies is found from the 48th degree of ſouth latitude to the antarctic circle, and in the iſland of Deſolation.

3. Aptenodytes *magellanica*. Magellanic Pinguin. The bill black, the feet ruddy; with two white faſciæ, one including the eyes, the other on the breaſt.

Inhabits the ſea in the neighbourhood of the Straits of Magellan, Tierra del Fuego, the Falkland iſlands, &c.

In theſe regions this is a very numerous ſpecies. It is of the ſize of the *antarctica*. It lives on fiſh. It feeds, ſleeps, and builds in the tufts of the Dactylis glomerata. It bites the perſon approaching it. Its fleſh, when properly dreſſed, is not unpalatable.

4. Aptenodytes *demerſa*. Cape Pinguin. Bill and feet black, a white faſcia above the eyes, and another on the breaſt.

Inhabits the Atlantic and Southern oceans, chiefly about the Cape of Good Hope.

This is the Diomedea demerſa of the former editions of the Syſtema Naturæ. It is of the ſize of a large duck; ſwims remarkably;

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remarkably; on dry ground, it waddles as it walks, aſſiſting itſelf with its wings. It builds among the ſea rocks, and lays two eggs, which are equal in ſize to thoſe of a duck, and are good to eat. Its bill is blackiſh, with a yellowiſh tranſverſe band near the point.

5. Aptenodytes *Catarractes*. Red-footed Pinguin. Bill and feet red; the head brown.

Inhabits the Southern ocean beyond the tropic.

This is the Phaëton demerſus, of the former editions of the Syſtema Naturæ. It is as large as a gooſe.

GEN. XXXII. PROCELLARIA. Bill without teeth, a little compreſſed; the mandibles equal; the upper one bent at the point; the under one compreſſed and channelled at the point: the noſtrils forming a truncated cylinder lying over the baſe of the bill: the feet palmated, the hind claw ſeſſile, without a toe.

The birds of this genus all frequent the deep; where they endure the greateſt ſtorms, being hardly ever ſeen on ſhore, except at breeding time. They are capable, however, of walking, and their legs are bare of feathers a little above the knee. They have the faculty of ſpouting oil from their noſtrils.

1. Procellaria *pelagica*. Stormy Petrel. Black, with a white rump.

Inhabits the ocean, particularly the Northern and Atlantic. B.

This ſpecies is of the ſize of a ſwallow. It avoids the ſhores, and runs as it were on the ſurface of the ſea; whence ſailors have given it the name of Petrel, from St. Peter's walking on the ſea. When a flock of theſe birds follow a ſhip, the ſailors expect a ſtorm in a few hours; and when it comes on, theſe birds keep cloſe under the ſtern. They dive well. They are mute by day, but clamorous in the night. They live on ſmall fiſhes. They build in the Orkney iſlands, under looſe ſtones, in the month of June or July. The inhabitants of the Feroe iſles draw a wick through the bird,

PROCELLARIA.

which, being lighted at one end, ſerves for a candle, the flame being fed by the fat and oil of the body.

2. Procellaria *glacialis*. The Fulmar. Whitiſh, the back hoary.

Inhabits the Northern and Southern oceans, as far as the arctic and antarctic circles. B.

This is a ſtupid and very bold bird, hardly afraid of man. It is very fat, living on fiſh, dead whales, and other carcaſes, and filth, on which account it often follows ſhips for a long time. It builds in Greenland, Spitzbergen, and St. Kilda, where it arrives in November, and lays one large white egg. Its fleſh is rancid, but is eaten by the Kurile iſlanders, the Greenlanders, and the St. Kildians, raw, dried, or boiled. Its oil being expreſſed is uſed raw both as food and for their lamps.

The young are in ſeaſon about the beginning of Auguſt. The inhabitants of St. Kilda endeavour to ſurpriſe them in the neſt, in order to prevent them from ſpouting out their oil, which they do by way of defence. This oil is valued there as a catholicon. Every young bird yields near an Engliſh pint of it, which is very carefully preſerved. It is very pure, when the thermometer is above 52 degrees, but when below that temperature the oil grows turbid. (*Dr. Walker.*)

3. Procellaria *capenſis*. Pintado. White, with brown ſpots.

Inhabits the ſouthern hemiſphere.

This is the Pintado bird of Dampier and other navigators. It keeps in the temperate zone of the ſouthern hemiſphere, and is frequent, and often in vaſt flocks, about the Cape of Good Hope. It is as large as a duck; but when it flies appears of the ſize of a tame pigeon, almoſt ſweeping the water. When it appears to the ſailors they then know they are not far from the Cape.

4. Procellaria *Puffinus*. The Shearwater. Body black above, white below, with red feet.

Inhabits chiefly the Northern ocean. B.

This bird breeds in the Orkney iſlands, where it is called the Lyre. It lays one egg upon the rocks or in rabbit holes, and the young one is hatched in Auguſt. The fleſh is rank and fiſhy, but by ſome it is much reliſhed. The bird is of the

PROCELLARIA.

the ſize of a pigeon; it fiſhes the whole day long, nor ever returns to its young one till the evening.

GEN. XXXIII. DIOMEDEA. Bill ſtraight, the upper mandible bent at the point, the under truncated; noſtrils oval, wide, raiſed, and lateral; tongue very ſmall; feet with three toes.

1. Diomedea *exulans*. The Albatroſs. White, the back and wings marked with black lines, the bill yellowiſh; the feet of a carnation colour; the flag feathers black; the tail rounded and of a leaden colour.

Inhabits the ſea, both within and without the tropics.

This bird is frequent about the Cape of Good Hope, and towards the end of July appears in great numbers in Kamtſchatka, and the ſeas which ſeparate that part of Aſia from America. It is frequently found larger than a ſwan. Its enemies are the ſea-eagles and the Larus Catarractes. It is a very voracious bird, feeding on the ſalmon which are found in ſhoals at the mouths of rivers, on the flying fiſh (Trigla volitans) when forced out of the water by the Coryphœna; and on other fiſhes, which it devours whole, and in ſuch quantities that it is prevented by their weight from riſing, though in general it ſoars very high; it likewiſe feeds on the molluſca. On the ſhore of South America, it builds, about the end of September, a neſt of earth upon the ground, from one to three feet high, and lays a number of eggs, which are eatable; the white of them does not coagulate with heat; they are 4¼ inches long. Its voice reſembles the braying of an aſs. It defends itſelf by biting with its bill. Its fleſh is hard and dry. The inhabitants of Kamtſchatka make a buoy to their nets of its inteſtines, blown up like a bladder. They alſo make tobacco-pipes and needle-caſes of the bones of its wings, and uſe them for heckling the graſs which ſerves them inſtead of flax.

GEN. XXXIV. PELECANUS. Bill ſtraight, bent at the point, with an unguis or nail; the noſtrils form a chink hardly obſervable; the face nearly bare of

PELECANUS.

Europe. It arrives there in the month of March, and continues till September. It is determined to theſe places from the circumſtance of their being ſteep and precipitous; for, as it cannot riſe from the ground, it needs a place from which it may, as it were, let itſelf fall before it can take wing. It makes a rude neſt of ſticks, graſs, ſea-plants, &c.; and lays one egg. While the female is employed in incubation, the male brings her food, which conſiſts almoſt intirely of Sprats and Herrings. In a ſack below their bill they are able to bring four or five Herrings at a time, and a great number of Sprats, which the young bird extracts from their mouth with his bill, as with a pincer. The young begin to be taken in Auguſt, and they alone are eatable, the old ones being tough and rancid. The fowler is let down from the top by a rope; he is ſtationed ſometimes on the ſlippery jutting of a rock, on which he has barely room to ſtand, with a perpendicular precipice below him of 400 feet or more. Unterrified by the danger, he ſeizes the young birds within his reach and kills them. The young are of a dark-grey colour, and continue ſo for a year or more, when they gradually become white, except the tips of their wings, which are always black. None breed but thoſe which are quite white. The old birds in September and October leave their breeding places, and migrate ſouthward, following the ſhoals of Herrings. They are frequently in December ſeen off Liſbon plunging for Sardinæ, a fiſh like the Pilchard. After that period, it is not well known what becomes of them till March.

7. Pelecanus *Sula*. The Booby. The tail wedge-ſhaped; the body whitiſh; the quill feathers blackiſh at the tips; the face red.

Inhabits the Indian, Atlantic, and northern ocean.

This is the bird called Booby by the Engliſh ſailors, from its being ſo ſilly as to alight, when tired, on a perſon's hand, if he holds it out. It builds in places bare of trees, making its neſt on the ground. Its fleſh is black and rancid.

GEN. XXXV. PLOTUS. Bill ſtraight, acuminated, and toothed; the face and chin bare of feathers; the feet ſhort and palmated; the toes connected by a membrane.

The

PLOTUS.

The birds of this genus have a ſmall head, and a long ſlender neck, with noſtrils ſituated at the baſe of the bill, in the form of a long conſpicuous fiſſure; they are found in the ſouthern and warmer latitudes; they live almoſt ſolely on fiſh, which they take by darting forward their bill, while they contract their neck like a Serpent.

1. Plotus *Anhinga*. White-bellied Darter. The head ſmooth; the belly white.

Inhabits the Braſils.

This bird is hardly the ſize of the common wild Duck; but, on account of its long neck, is near three feet from the bill to the tail. Like the Corvorant, it builds in trees; it is ſeen ſometimes on the higheſt branches of trees growing near water, ſometimes ſwimming, but ſeldom on the ground; its fleſh is fat, oily, and rancid.

GEN. XXXVI. PHAETON. Bill cultrated, ſtraight, acuminated; the gape extending beyond the bill; the noſtrils oblong; the hind toe turned forward.

The ſpecies of this genus inhabit the South Seas, eſpecially between the tropicks; their bill is compreſſed, and bent a little downwards; the under mandible angulated; the feet have four toes, which are palmated; their tail is wedge-ſhaped, and is diſtinguiſhed by the two intermediate feathers being very long.

1. Phaëton *aethereus*. The Tropic Bird. White; the back, rump, and leſſer coverts of the wings ſtriated with black; the two intermediate tail-feathers black at the baſe; the bill red.

Inhabits between the Tropics.

This bird is well known to navigators, to whom its appearance announces their approach to the tropic; but, as it ſometimes, though rarely wanders to the latitude of 47½°. it is not certainly to be depended on. It is of the ſize of a Wigeon; it flies very high, and at a great diſtance from land; it feeds on Sharks, Dolphins, and Albicores; on land, it ſits on trees, and builds on the ground in woods; its fleſh is indifferent; the long feathers of its tail appear to be only ornamental.

GEN.

GEN. XXXVII. COLYMBUS. Bill without teeth, ſubulated, ſtraight, and acuminated; teeth in the gullet; noſtrils linear, ſituated at the baſe of the bill; the feet placed far behind.

This genus is divided into three ſections.

* Thoſe with three toes, Guillemots.

** Thoſe with four palmated toes, Divers.

*** Thoſe with four lobated toes, Grebes.

The birds of this genus are unable to walk; but they fly very ſwiftly on the ſurface of the water, and ſwim and dive remarkably; they have a tough ſkin; their tail is ſhort. The ſpecies which belong to the firſt ſection, inhabit chiefly the deep ſeas; they have a ſlender tongue, of the ſize of the bill, which is compreſſed at the baſe, and covered with ſhort down; the upper mandible is a little bent at the point; their fleſh is tough, and their eggs nauſeous, though they are eaten by the Greenlanders and the inhabitants of Kamtſchatka, who likewiſe make cloaths of their ſkin; theſe eggs they depoſit on the bare rocks; they are gregarious; they walk indifferently on the ſtones, and fly very ſwiftly. The birds of the ſecond ſection frequent the lakes of the northern regions; their bill is ſtrong, cylindrical, and not ſo ſharp pointed; the margin of the mandibles is bent inwards; the upper one is larger than the under; the noſtrils are divided by a little membrane; the tongue is long and pointed, ſerrated at both ſides to the baſe; their feet are ſlender and flatted; there is a black faſcia on the inſide of their thighs; their tail conſiſts of 20 feathers; they pair; they lay their eggs among graſs; they fly with difficulty, and during incubation, frequent the freſh waters. The birds of the third ſection have no tail; they have a ſtrong bill; the lora bare; the tongue ſlightly cleft at the apex; the body depreſſed, thickly covered with ſoft ſhining feathers; their wings are ſhort; their feet compreſſed; they abound in the freſh waters of ſouthern Europe, and differ in colour according to their ſex, their age, and the ſeaſon of the year.

* *With three toes.* Guillemots.

1. Colymbus *Grylle.* The ſpotted Guillemot. The body black; the coverts of the wings white.

Inhabits the ſea in the Northern parts of Europe, Aſia, and America. B.

This

COLYMBUS.

This bird frequents the iſlands of Baſs, St. Kilda, and other places in Scotland and England. Except at breeding time, it keeps always at ſea. It viſits theſe places in March; makes its neſt far under ground, and lays a grey egg. It is of the ſize of a Pigeon, and has been called the Greenland Dove or ſea Turtle. It lives on fiſh; it flies low, and generally in pairs. It cannot riſe from the ground, and even falls when it has ſix feet of height to riſe from.

2. Colymbus *minor*. Leſſer Guillemot. Black, with a narrow ſtripe acroſs the wings; the cheeks and under parts white.

Inhabits the Britiſh ſeas. B.

This is perhaps only a young bird of the following ſpecies; they appear in the Frith of Forth during winter in flocks innumerable, feeding on Sprats. They do not breed there but retire before ſpring.

3. Colymbus *Troile*. The Scout. The body black; the breaſt and belly ſnow-white; the ſecondary flag-feathers white at the tips.

Inhabits the frozen ſeas of America, Europe, and Aſia. B.

This bird is called in Scotland the Marrot, in the iſland of St Kilda, the Lavie. It appears about the beginning of February, and, in that iſland, is hailed as the auſpicious harbinger of approaching plenty, by the inhabitants. A St Kilda man deſcends in the night by the help of a rope to the jutting ledge of a precipice, where he fixes himſelf, and, tying round him a piece of white linen, awaits the arrival of the Lavie: the bird, miſtaking the white cloth for a piece of the rock, alights on it, and is immediately caught and diſpatched. Sometimes 400 are taken in this way in one night, and, at dawn, the fowler is drawn up. This bird lays but one egg, which is very large; it makes no neſt, and the egg has ſo ſlender a hold of the rock, that, when the birds are ſurprized, and fly off ſuddenly, many of them tumble down into the ſea.

* * *With palmated feet and four toes.* Divers.

4. Colymbus *ſeptentrionalis*. Red-throated Diver. The throat marked with a dark red ſpot.

Inhabits the north of America, Europe, and Aſia. B.

This bird is not ſeen far ſouthward, except in the hardeſt

COLYMBUS.

winters; it frequents the lakes in preference to the ſea; it lives on marine vermes, Crabs, and the ſmaller fiſhes, which it ſometimes carries off when they are taken in nets, and is itſelf often taken along with them; it breeds in the northern parts of Scotland; it conſtructs a neſt of moſſes and graſs, in the herbage on the banks, ſometimes ſtuffing it with its own down; it lays two grey eggs ſpotted with black, longer, but not ſo thick as a Hen's egg; it ſwims and flies ſwiftly, and when it ſcreams in its flight, it is ſaid to preſage a ſtorm.

5. Colymbus *arcticus*. Black-throated Diver. The head hoary; the under part of the neck of a purpliſh black, with a white interrupted faſcia.

Inhabits the northern parts of America, Europe, and Aſia. B.

This ſpecies frequents both the lakes and the ſea. Before rain, it is reſtleſs and clamorous; hence, it is held as a ſacred bird by the Norwegians: the Swedes prepare the ſkin, and uſe it in various ways.

6. Colymbus *ſtellatus*. Speckled Diver. White below; the hind head and flag-feathers dusky; the throat of a pale aſh-colour, the back, the ſides, the rump, and the tail ſpotted with white.

Inhabits the north of America, Aſia, and Europe. B.

In the Thames, this ſpecies is called Sprat-loons, from their accompanying that fiſh during its ſtay there. They are gregarious; they lay two eggs in the graſs on the banks of the ſea lakes.

7. Colymbus *glacialis*. Northern Diver. The head and neck of a purpliſh black, with a white interrupted faſcia on the throat and back of the neck.

Inhabits the North Seas. B.

This ſpecies is not ſeen ſouthward of the North Sea, except in the ſevereſt winters. It frequents the ſeas at the Orkney iſlands all the year round, and yet does not breed there. It is the largeſt of this genus, being three feet ſix inches long; it flies ſwiftly and very high.

8. Colymbus *Immer*. The Ember Gooſe. The body blackiſh above, waved with white; below wholly white.

Inhabits

COLYMBUS.

Inhabits the northern ocean. B.

This ſpecies is likewiſe found in the ſeas about the Orkney iſlands all the year round; but its place and manner of hatching are there unknown: Linnæus ſays it makes its neſt among reeds and carices on the very water; it has a ſhrill voice, and is with difficulty taken. The ſkins of this and the preceding ſpecies are uncommonly tough, and, in ſome countries, have been uſed as leather.

* * * *With lobated feet and four toes.* Grebes.

9. Colymbus *criſtatus*. Creſted Grebe. The head red; the neck with a black ruff; the ſecondary flag-feathers white.

Inhabits the lakes of Europe and Siberia. B.

This ſpecies is of the ſize of a Duck; it is ſeldom ſeen upon land; it lives on fiſh, and ſometimes eats vegetables; it makes a floating neſt formed of the Menyanthes, the Nymphæa, Hottonia, &c. and lays four white eggs. It breeds in the fenny countries in England, and feeds its young on ſmall Eels. Of the ſkin of the belly of this ſpecies, in ſome countries, are made ladies muffs, and other ornamental articles of their dreſs, which are of a dazzling whiteneſs. It takes five ſkins to make a muff, which ſells ſo high as four or five pounds.

10. Colymbus *auritus*. Eared Grebe or Dobchick. The head black, with a ruſty coloured tuft of feathers at the ears.

Inhabits the lakes of northern Europe and Siberia. B.

This ſpecies conſtructs a floating neſt among reeds, and lays four or five ſmall white eggs. It breeds in England.

11. Colymbus *minor*. Little Grebe. Of a reddiſh brown colour; below, white with ſpots; the head ſmooth.

Inhabits Europe and North America. B.

This ſpecies is a remarkable diver, feeding on fiſh, inſects, and aquatic plants, conſtructing a neſt of graſs and the ſtalks of aquatic plants, in the midſt of the waters which pervade it; it is large, and a foot thick. The bird lays five or ſix whitiſh eggs, and covers them when it quits the neſt. The male and female are like each other.

12. Colymbus *obſcurus*. Dusky Grebe. The head

COLYMBUS.

without creſt; the forehead, the under part of the body, and the tips of the ſecondary flag-feathers white.

Inhabits England and New York. B.

This ſpecies breeds in the fens of Lincolnſhire.

13. Colymbus *Urinator*. Greater Dobchick or Loon. The head ſmooth; the under eye-lid yellowiſh, with a white ſpot on the wing.

Inhabits Southern Europe. B.

This is not a common bird in England. It is frequent in the lake of Geneva and in Siberia, and is killed for the ſake of its beautiful ſkin, which is uſed for muffs and tippets.

14. Colymbus *hebridicus*. The black-chin Grebe. The head ſmooth; the chin black; forepart of the neck ferruginous; the belly cinereous, with ſilvery intermixed.

Inhabits the iſland of Tiree, one of the Hebrides. B.

This ſpecies is a little larger than the Little Grebe.

GEN. XXXVIII. LARUS. The bill without teeth, ſtraight, cultrated, the point ſomewhat turned in; the under mandible gibbous under the point; the noſtrils linear, broadeſt before, and ſituated in the middle of the bill.

The birds of this genus are inhabitants of the North; their body is ſmooth; they have long wings; their tongue is a little cleft; their bill ſtrong; their feet ſhort; bare of feathers above the knee; with a ſmall back toe; eaſily to be diſtinguiſhed, particularly from the birds of the genus Sterna, by a more equable proportion of all the parts; they feed chiefly on fiſhes, and even on thoſe that are dead; when harraſſed, they throw up or diſcharge their food; the young are ſometimes ſpotted to their third year, and hence, the ſpecies are with difficulty aſcertained; their eggs are eatable, but ſeldom their fleſh.

1. Larus *Riga*. The Kittywake. White; the back grey; the whole tail-feathers white; the feet with three toes.

Inhabits

LARUS.

Inhabits the north of America, Europe, and Aſia. B.

It is doubtful whether this is not a variety of the following ſpecies, differing only in age.

2. Larus *tridactylus*. The Tarrock. Whitiſh; the back greyiſh; the tips of the tail-feathers, except the outermoſt, black; three toes.

Inhabits the north of Europe and Aſia. B.

This ſpecies is of the ſize of a Pigeon; it flies and ſwims rapidly; it is clamorous; it feeds on fiſhes, and ſeeks its food in company with Whales and Seals; it builds in ſea rocks, and lays two eggs; its fleſh is much reliſhed by the Greenlanders, who likewiſe make cloathes of its ſkin. One that was kept and tamed, knew its maſter's voice at a diſtance, and anſwered him with its hoarſe piping note. It had a voracious appetite, and would ſwallow a bone of the length of a ſpan. It was fed on bread, but after a good meal, would rob the poultry of their ſhare.

3. Larus *hybernus*. Winter Gull. White; the crown and hind part of the head, and the ſides of the neck ſpotted; the back aſh-coloured; the firſt quill-feather black; a black faſcia on the tail near the apex.

Inhabits the Britiſh ſeas. B.

This ſpecies, though it reſides in the ſea, often comes inland, particularly during winter, and in moiſt weather, to feed on earth worms, and Frogs; the half digeſted remains of which, it often diſgorges in a gelatinous ſtate, and this is the ſubſtance called in England ſtar-ſhot, or ſtar-jelly.

4. Larus *canus*. Common Gull. White; the back grey.

Inhabits the rivers and lakes of the northern parts of Europe and America. B.

This ſpecies is of the ſize of a Pigeon, and is ſeen in numerous flocks, continually ſcreaming; it lives on vermes, the larvæ of inſects, and fiſhes; building in rocks, and among ſtones, laying two eggs; it is a ſtupid bird.

5. Larus *cinerarius*. Red-legged Gull. White; the back grey; with a dusky ſpot behind the eyes.

Inhabits Europe. B.

This is perhaps only a variety of the *ridibundus* or the *tri-*

LARUS.

tridactylus, differing in age. It is diſtinguiſhed from the preceding ſpecies by the duſky ſpot between the eyes and the ears.

6. Larus *erythropus*. Brown-headed Gull. The head and throat of a mouſe-colour ſpotted with white; the back aſh-coloured; the bill, feet, and eye-lids, red; the neck, the abdomen, and tail, white.

Inhabits Kamtſchatka. B.

This bird breeds in the fens of England, and on the ſhores of rivers in England and Scotland. It makes its neſt on the ground with ruſhes, dead graſs, and ſuch like; it lays three eggs. After breeding, it departs to the ſea coaſts. It is ſeen at Aleppo in winter.

7. Larus *naevius*. The Wagel. White, the back aſh-coloured; the tail feathers at the tip white, behind a bar of black.

Inhabits the European ſeas. B.

This ſpecies varies exceedingly and it is not perfectly aſcertained whether it is not a variety of the *fuſcus* or of the *tridactylus* differing only by reaſon of age or ſex.

8. Larus *marinus*. Black-backed Gull. White, the back black.

Inhabits Europe, the South Seas, &c. B.

This ſpecies is of the ſize of a gooſe and cackles like it; it infeſts the Eider Duck, and even lambs; it lives on fiſh; it lays three eggs which are good to eat in a neſt made in the clefts of the higheſt rocks. Its ſkin is uſed for clothes by the Eſkimaux and Greenlanders; the fleſh of the young is eatable, and it affords a fine down.

9. Larus *fuſcus*. The Herring-Gull. White, the back browniſh.

Inhabits Europe, North America and Aſia. B.

This ſpecies proceeds ſouthward in winter as far as the Black and the Caſpian ſeas, Jamaica and the iſlands on the ſhore of South Carolina. It lives on fiſh eſpecially herrings, and the ſight of it is a good omen to the fiſhermen; it is ſo bold as to ſeize its prey before their faces. It makes its neſt of hay, and lays three whitiſh eggs with black ſpots.

10. Larus *ridibundus*. Black-headed Gull. Whitiſh, the head blackiſh; bill and feet red.

Inhabits

LARUS.

Inhabits America, Europe, and Aſia. B.

The note of this ſpecies, being like a horſe-laugh, has occaſioned the trivial name. They breed in vaſt numbers in the pools and fens of England. They make their neſt on the ground with ruſhes, dried graſs, &c. and lay 3 eggs. When the breeding ſeaſon is over they diſperſe to the ſea coaſts. The young were formerly highly eſteemed and numbers were annually taken and fattened for the table.

11. Larus *paraſiticus*. The Arctic Gull. With the two middle tail feathers very long.

Inhabits Europe, Aſia and America. B.

This ſpecies breeds in the Hebrides, making its neſt in the heath of graſs and moſſes, and laying two eggs equal in ſize to hens eggs. Its manners are ſingular; being unfit for fiſhing itſelf, it chaces other birds, and, by harraſſing and frightening them, makes them diſcharge the food they have taken, which it catches before it falls into the water.

12. Larus *crepidatus*. Black-toed Gull. The two intermediate tail feathers longer than the reſt.

Inhabits the north ſeas of Europe and America. B.

This ſpecies is ſomewhat ſmaller than the preceding. It makes its neſt of graſs and lays two eggs. Its excrement is red, owing to its feeding on the Helix janthina.

13. Larus *Cataractus*. The Skua Gull. Greyiſh, the flag and tail feathers white at the baſe; the tail nearly equal.

Inhabits the North Seas. B.

This ſpecies likewiſe inhabits the South ſeas, and is known to our navigators by the name of the Port Egmont hen. It is about the ſize of a raven. It preys not only on fiſhes but on the leſſer ſorts of water fowl, ſuch as Teal, &c. In Shetland it is called Bonxie, and poſſeſſes the higheſt ridges of one of the hills in the iſland of Foula. It is there a privileged bird; there being a fine of 10l. Scots or 16s. 8d. for deſtroying its eggs, becauſe it beats off the Eagle, which dares not prey on the iſland during the whole breeding ſeaſon. It is not ſo ſtrong as the Eagle, but much nimbler, and ſtrikes at him with ſuch effect that he ſcreams aloud. It is a fierce and bold bird, attacking men and dogs when they approach its quarters. When it appears among other birds it occaſions great

LARUS.

great confuſion, and they expreſs their deteſtation as when the Owl or other birds of prey appear elſewhere. It breeds in the heath and lays two eggs.

GEN. XXXIX. STERNA. The bill without teeth, ſubulated, nearly ſtraight, acute and ſomewhat compreſſed. The noſtrils linear, ſituated at the baſe of the bill.

The birds of this genus are chiefly inhabitants of the ocean and feed on fiſhes. They are not afraid of man; they have forked tails; their wings are very long; their back toe is ſmall; their tongue ſlender; the young are ſpotted.

1. Sterna *Hirundo*. The Sea Swallow. The two outermoſt tail-feathers black and white.

Inhabits Europe, Aſia and America. B.

This ſpecies is bold and fierce, particularly in the ſeaſon of breeding, and ſtrikes at the faces of thoſe who approach its neſt. It builds in ſmall holes or in tufts of ruſhes, and lays three or four olive-coloured eggs with black ſpots. It feeds on ſmall fiſhes and water inſects, hovering over the water, and then ſuddenly darting down upon its prey. It often flies very high and in flocks, perpetually ſcreaming. It lives in monogamy, and the male and female are indiſſoluble companions.

2. Sterna *minuta*. The Leſſer Sea Swallow. The body white, the back grey, the forehead and eyelids white.

Inhabits Europe, Aſia and America. B.

This ſpecies is about the ſize of the common houſe-ſwallow. Its manners are the ſame with thoſe of the former. Both of them leave us in winter and return in the Spring.

3. Sterna *fiſſipes*. The Black Tern. The body black, the back aſh-coloured, the belly white, the feet red.

Inhabits the north of America and Europe. B.

This ſpecies abounds in the ſalt lakes of Siberia and Tartary, and alſo in the freſh water lakes and fens of Britain. It feeds on fiſh and inſects, and breeds among the reeds of marſhes laying 3 or 4 eggs. They are often found at a great diſtance from land.

4.

STERNA.

4. Sterna *solida*. The Noddy. The body black, the forehead whitiſh, the eye-lids black.

Inhabits the ocean, between the tropics.

This is the bird called the Noddy by Dampier, and other navigators. It is a clamorous bird, which never goes very far from ſhore, and always reſts there during night. It builds on the rocks; its eggs are excellent.

GEN. XL. RYNCHOPS. The bill ſtraight, the upper mandible ſhorter than the under; the under one truncated at the apex.

The birds of this genus in manners and food are allied to the Lari: their tail is forked and ſhorter than the wings; their noſtrils are linear, and their back toe is ſmall. Their feet are weak, and their noſtrils communicate with each other.

Rynchops *nigra*. The Cut-water. Blackiſh, white below, the bill red at the baſe.

Inhabits the ſhores of America from New York to Surinam. (See Plate IV. fig 2.)

This bird is ever on the wing ſweeping the ſurface of the water; dipping in its bill, or at leaſt the under mandible of it, by which means it ſcoops out the ſmaller fiſhes, which are its food. In ſtormy weather it frequents the ſhores, feeding on oyſters and other ſhell-fiſh.

ORDER IV. GRALLÆ.

THE birds of this Order agree more in appearance and manner of life, than in the ſtructure of their bill. Their legs in general are more or leſs bare of feathers above the knee; and their feet commonly furniſhed with four toes, of which three ſtand forwards, and one backwards; they are in ſome unconnected, in ſome wholly, and in others half connected by a web. Some too have only

toes. Their legs are long that they may ſeek their in marſhy and ſwampy places; they have conſequently all a long neck, and for the moſt part a long Their bodies are oval, ſomewhat compreſſed, and tail is in general ſhort. Their tongue is fleſhy and naked. They build chiefly on the ground and in places. Their fleſh is ſavoury, and together with eggs is eaten by ſome. They feed chiefly on fiſhes water inſects. The whole are more or leſs migra- and thoſe that inhabit the more northern countries Europe, univerſally leave them at the approach of winter.

XLI. PHOENICOPTERUS. The bill bare, incurved as if broken; internally denticulated; the noſtrils linear; the feet palmated with four toes.

The birds of this genus combine the Order of Anſeres with the Grallæ; they have a long neck and legs; their bill is ſtrong and thick; the upper mandible carinated above, denticulated at the margin; the under one compreſſed, tranſverſely ſulcated; the noſtrils above covered with a thin membrane; and communicating with each other; the back toe is very ſmall, the web which connects the fore-toes reaches to the nails.

Phoenicopterus *ruber*. The Flamingo. With black flag-feathers.

Inhabits Africa and South America.

This bird is alſo found in the warmer parts of Europe, but hardly farther north than the 40th degree of latitude, as it cannot endure cold. The young bird may be tamed. It feeds on aquatic birds, fiſhes, and their eggs, which it ſeeks with its bill at the bottom of the water, ſo bending its neck, that the upper part of its bill touches the ground. When they are in flocks, one bird ſtands centinel: their neſt is formed of clay in a marſh, riſing about 20 inches above the water, which always covers the baſe, in which they lay two eggs.

The

PHOENICOPETERUS.

The bird is hardly ſo large as a Gooſe, but its legs and neck are ſo long, that when it ſtands erect, it is ſometimes ſix foot high. Its fleſh, particularly the tongue, was antiently thought a great delicacy.

GEN. XLII. PLATALEA. Bill flattiſh, long, and thin; dilated at the point into a round flat ſurface; the noſtrils ſmall, and placed at the baſe of the bill; the tongue ſmall and acuminated; the feet with four toes, ſemipalmated.

Platalea *Leucorodia.* The Spoonbill. The body white; the throat black, with a ſhort creſt on the hind part of the head.

Inhabits from the Feroe iſles to the Cape of Good Hope.

This bird is of the ſize of a Heron; but its neck and feet are ſhorter; it lives on graſs, carices, the roots of reeds, Serpents, Frogs, Muſcles, and other ſhell-fiſh, but eſpecially on fiſhes, which it often ſeizes from other birds. It builds in the higheſt trees, and lays three or four white eggs.

GEN. XLIII. PALAMEDEA. Bill conical; the upper mandible bent; noſtrils oval; feet with four toes, unconnected, except by a very ſhort membrane at their origin.

Palamedea *cornuta.* The horned Screamer. With a ſpine on each wing, and a horn on the head.

Inhabits South America.

This ſingular bird frequents chiefly moiſt and maritime places, living on herbs and ſeeds, but particularly on reptiles. It makes a large neſt of clay like an oven, and lays two eggs. It is as large as a Turkey; it has a terrible cry; it is never found alone, but always with its mate; and Margraff ſays, that when one dies, the other never leaves the carcaſe.

GEN. XLIV. MYCTERIA. The bill turning up a little, and acute; the upper mandible three-ſided,

MYCTERIA.

and very ſtraight; the under three-cornered, acuminated, and turning up; the forehead bare; the noſtrils linear; no tongue; four toes.

Of this genus there is but one ſpecies.

Mycteria *americana*. American Jabiru.

Inhabits South America.

This bird is inferior in ſize only to the Oſtrich, and is not unlike the Struthio Rhea. It is fierce and very voracious; it lives on fiſhes; builds in large trees on the banks of rivers, laying two eggs. When young, it is of a grey colour; in the ſecond year, it becomes reddiſh; in the third, it turns wholly white.

GEN. XLV. CANCROMA. The bill gibbous; the upper mandible like a boat turned upſide down; the noſtrils ſmall, lying in a furrow of the bill; tongue ſmall; toes unconnected.

Cancroma *Cochlearia*. The boat-bill. The belly of a reddiſh colour.

Inhabits South America.

This bird frequents the trees by the ſides of rivers, ſitting on the branches which overhang the water, looking for fiſh, on which it feeds.

GEN. XLVI. SCOPUS. The bill thick, compreſſed, long, and ſtraight; the noſtrils linear and oblique; the feet with four unconnected toes.

Scopus *Umbretta*. Tufted Umbre.

Inhabits Africa.

This is the only ſpecies of the genus; it is of the ſize of a Crow.

GEN. XLVII. ARDEA. The bill ſtraight, acute, long, ſomewhat compreſſed, marked with a furrow from the noſtrils to the point; the noſtrils linear; the tongue acuminated; four toes.

This

ARDEA.

This is a numerous genus, and therefore divided into five ſections.

* Creſted: the bill hardly longer than the head.

** Cranes: the head bald.

*** Storks: the orbits of the eyes naked.

**** Herons: the middle toe ſerrated.

***** ——: the bill gaping in the middle.

The birds of this genus have long feet and necks, and live on Amphibia and fiſhes.

* Creſted: *the bill hardly longer than the head.*

1. Ardea *pavonina.* The Crown bird. With an erect creſt of briſtles; the temples and two wattles naked.

Inhabits Africa, Guinea, and Cape Verde.

This bird is of the ſize of the common Heron. It may be eaſily tamed; it lives on worms and vegetables; it runs ſwiftly and flies eaſily for a long time; it ſleeps ſitting on one foot; its fleſh is tough.

** Cranes: *the head bald.*

2. Ardea *Grus.* The common Crane. The hind head naked with papillæ; the top of the head and flag-feathers black; the body aſh-coloured; the innermoſt tail-feathers fimbriated.

Inhabits Aſia and Europe.

This bird annually migrates in flocks to the ſouthern parts of Aſia and Africa in autumn. It feeds on reptiles of all kinds, and on young corn, and is therefore hurtful to fields of grain. It builds in moiſt places, and lays two bluiſh eggs. It reſts on one foot, and flies very high. It often viſits England, and is ſometimes ſeen in vaſt flocks in the fens of Lincolnſhire and Cambridgeſhire.

*** Storks: *with naked orbits.*

3. Ardea *Ciconia.* Common Stork. White; the orbits and flag-feathers black; the bill feet and chin red.

Inhabits Europe, Aſia, and Africa.

The Stork is well known in Holland, and other countries of Europe, for its uſefulneſs in deſtroying Frogs and other Amphibia; it is therefore a crime to injure it; Toads, however

ARDEA.

ever, it will not touch. It breeds in the villages, making a large neſt of ſticks. In the night, it utters a particular cry from its neſt, and makes a ſnapping with its bill, by ſtriking the two mandibles againſt each other. It lays from two to four eggs, and the young are alternately guarded by the male and female. It ſleeps ſtanding upon one foot. In autumn theſe birds migrate in numerous flocks, in the greateſt order, and with aſtoniſhing velocity, to the lakes and marſhes of Egypt and Barbary. The periods of their migration are wonderfully conſtant. They arrive in Holland on the 29th day of March, and leave that country on the 3d of September, hardly varying a day. Previous to their departure, they aſſemble in flocks of from 500 to 1000; and as they have never been ſeen to alight on their paſſage, it is probable they ſtretch the whole way at one flight, which they accompliſh in 40 or 50 hours.

* * * * Herons: *the middle toe ſerrated.*

4. Ardea *major*. Common Heron. The hind head with a pendent creſt; the body aſh-coloured; the under part of the neck marked with a black tranſverſe line and faſcia.

Inhabits Europe, Aſia, Africa, and America. B.

The Heron is well known. The male is a very beautiful bird. It frequents ponds and lakes, and will ſtand patiently for hours watching for fiſh, on which it chiefly feeds, though it likewiſe eats Frogs and vegetables. When it flies very high, it preſages a ſtorm; in flying, it hides its head between its ſhoulders, and its feet hang down. At breeding time, it is gregarious, making its neſt of ſticks in high cliffs over the ſea, but more frequently in tall trees, and lining it with dry graſs, wool, and feathers. It lays four or five eggs.

5. Ardea *cinerea*. The hind head black, without a creſt; the back bluiſh; below, whitiſh; the breaſt marked with oblong black ſpots.

This is a variety of the preceding.

6. Ardea *Garzetta*. The Egret. The hind head creſted; the body white; the bill black; the lores and feet greeniſh.

Inhabits the temperate and warmer regions of the globe.

This

ARDEA.

This ſpecies frequents moiſt places and the banks of rivers, feeding on fiſh. It ſometimes viſits England, but only occaſionally, and therefore cannot be enumerated among the native birds.

7. Ardea *ſtellaris*. The Bittern. The head nearly ſmooth; of a reddiſh brown colour above, with tranſverſe ſpots; paler underneath, with oblong browniſh ſpots.

Inhabits the temperate regions of Europe. B.

This is an indolent bird, feeding on Mice, Frogs, and other Amphibia and fiſhes, which it ſwallows whole; defends itſelf by biting, and by ſtriking at the eyes of an enemy with its bill: it bellows like an Ox; in the evening, after the ſun has ſet, eſpecially in autumn, it riſes with a ſpiral flight very high into the air. It makes its neſt of ruſhes, among the reeds in marſhes. Its fleſh is eſculent.

8. Ardea *alba*. The white Heron. The head without a creſt; the body white; the bill tawny; the feet black.

Inhabits Europe. B.

This bird is not common in England, nor in northern countries. It is found about the Euxine and Caſpian Seas, the lakes of Great Tartary, the river Irtiſch, and in the new world, chiefly in South America, as far as New Zealand.

9. Ardea *minuta*. Little Bittern. The head without a creſt; the body browniſh; reddiſh below; the tail-feathers greeniſh black; the lores yellowiſh.

Inhabits Switzerland, Arabia, Syria, &c.

This ſpecies has been ſeldom ſeen in England. It is no bigger than a Thruſh.

* * * * * *The bill gaping in the middle.*

10. Ardea *coromandeliana*. Coromandel Heron. White; the back, the flag feathers, and tail black; the upper mandible ſerrated from the middle to the apex.

Inhabits the coaſt of Coromandel.

This bird appears on that coaſt from September to December, on the banks of the rivers and pools, feeding on fiſhes and Amphibia.

GEN.

GEN. XLVIII. TANTALUS. The bill long, ſubulated, ſomewhat cylindrical and arched; the face beyond the eyes naked; the tongue ſhort and broad; a naked ſack at the throat; noſtrils oval; four toes, palmated at the baſe.

Of this genus there are no Britiſh, and but one European ſpecies.

Tantalus *Ibis*. The Egyptian Ibis. The face red; the bill yellowiſh; the feet grey; the flag-feathers black; the body reddiſh white.

Inhabits Lower Egypt.

This bird is larger than a Stork; it feeds on Frogs, Inſects, and Serpents; of which it clears the country of Egypt, when they abound after the inundations. It reſts ſitting erect, ſo that its tail is in contact with its feet. This is the bird that was ſo revered by the antient Egyptians, that they embalmed its body with as much care as if it had been a human being. Its figure repreſented Egypt in their hieroglyphic writing. In that country it is ſtill called Pharaoh's bird; it builds in the palm trees.

GEN. XLIX. CORRIRA. Bill ſhort, ſtraight, without teeth; long feet, with four palmated ſhort toes.

Corrira *italica*.

Inhabits Italy.

This bird has received its generic name, being that given it in Italy, on account of the ſwiftneſs with which it runs.

GEN. L. SCOLOPAX. Bill ſomewhat cylindrical, obtuſe, and longer than the head; noſtrils linear; face covered with feathers; four toes; the hind one conſiſting of ſeveral articulations.

The birds of this genus, as well as thoſe of the ſubſequent one, are with difficulty aſcertained; they differ in appearance from age and ſex, and their colours are not very diſtinct. The colour of their feet is pretty conſtant, and therefore affords a good character.

1. Sco-

SCOLOPAX.

1. Scolopax *arquata*. Common Curlew. The bill arched; the feet bluiſh; the wings black, with white ſpots.

Inhabits Europe, and the north of Aſia. B.

Curlews frequent our ſea coaſts and marſhes during winter in large flocks; they feed on ſhell-fiſh, crabs, and other marine inſects. In ſummer, they retire to the mountanous and unfrequented parts of the country, where they pair and breed, and at that time live on Frogs, worms, and water inſects. They lay four olive-coloured eggs, with browniſh ſpots. Their fleſh is eſculent; it is beſt in ſummer; in winter, it is rank and fiſhy.

2. Scolopax *Phaeopus*. The Whimbrel. The bill arched; the feet bluiſh; with browniſh rhomboidal ſpots on the back.

Inhabits Europe and America. B.

Theſe birds are not ſo common as the former; their manners and haunts are nearly the ſame, and even their appearance is alike, except as to the ſize, the Curlew being twice the bulk of the Whimbrel.

3. Scolopax *Ruſticola*. The Woodcock. Bill ſtraight, reddiſh at the baſe; feet aſh-coloured; the thighs covered with feathers; a black ſtripe on the head.

Inhabits Europe, Aſia, and Africa. B.

Woodcocks are migrating birds. They begin to appear in England early in October, but the great body do not arrive till November and December, when they diſperſe themſelves over the country; towards the middle of March they prepare for their departure to their breeding places; they come down to the ſea-coaſts, and are ſoon gone if the wind is favourable; but, if it be contrary, they linger there till it change. A few of them ſometimes remain behind, and breed in England. Woodcocks frequent moiſt woods, and rivulets near hedges; they feed on worms; they fly by night, and return through the ſame tract, only not ſo high; they build on the ground near the trunk or root of ſome tree; their neſt is made of a few fibres or dry leaves; they lay four or five eggs; they are highly eſteemed at table.

4. Scolopax *major*. Great Snipe. Feet and crown of the head black; the head divided by a pale line; a

SCOLOPAX.

pale line above and below the eyes: body variegated above; white below.

Inhabits Germany, Siberia, &c. B.

This is a rare bird in England; it is of a middle ſize, between the Woodcock and the Snipe.

5. Scolopax *Gallinago*. The Snipe. Bill ſtraight and tuberculated; the feet browniſh with four browniſh lines on the forehead.

Inhabits the four quarters of the world. B.

Snipes, in winter, frequent marſhy and wet grounds, where they lie concealed in the ruſhes; in ſummer, they diſperſe, and are found in the midſt of our mountanous countries, as well as in low moors. Their neſt is made of dried graſs; they lay four eggs; their food is the ſame with that of the Woodcock; their flight very irregular and ſwift, attended with a ſhrill ſcream. In the breeding ſeaſon, when diſturbed, they ſoar to a vaſt height, making a ſingular bleating noiſe, and when they deſcend, dart down with vaſt rapidity. From this high flight, which is peculiar to the male, the ſhrill note he utters, in ſuperſtitious times, was called the *campana cœleſtis*.

6. Scolopax *Gallinula*. The Jack Snipe. The bill ſtraight and tuberculated; the feet greeniſh; the lores brown; the rump a gloſſy bluiſh purple.

Inhabits America, Europe, and Aſia. B.

The haunts and food of this ſpecies are the ſame with thoſe of the former: it is much leſs frequent in England, and difficult to be found, lying ſo cloſe as to hazard being trod on, before it will riſe; its flight is ſluggiſh, and never diſtant.

7. Scolopax *pugilla*. The Dunlin. The bill a little turned up; the belly, rump, and ſides, white; the back, the coverts of the wings, and tail ferruginous, with white lines.

Inhabits Siberia. B.

This is a rare bird in ſome places of England, but common on the Yorkſhire coaſts. It is larger than a Lark; it lays four eggs.

8. Scolopax *Glottis*. The Greenſhank. Bill ſtraight, the

SCOLOPAX.

the under part of the baſe red; the body below white, the feet greeniſh.

Inhabits Aſia, America, and Europe. B.

Theſe birds appear in the winter time on our coaſts in ſmall flocks; they likewiſe frequent wet grounds: they are birds of elegant ſhape, and ſmall weight in proportion to their dimenſions, weighing only ſix ounces.

9. Scolopax *Calidris*. The Redſhank. Bill ſtraight and red; feet ſcarlet; the ſecondary flag-feathers white.

Inhabits Europe, America, and Siberia. B.

This ſpecies is found on moſt of our ſhores. It breeds in the fens and marſhes, and flies round and round its neſt when diſturbed, making a noiſe like a Lapwing. It lays four eggs.

10. Scolopax *Totanus*. Spotted Snipe. Bill nearly ſtraight; the feet brown; the eye-brows, breaſt, belly, and rump, white.

Inhabits Europe, and North America. B.

This ſpecies is of the ſize of a Greenſhank; it frequents the banks of rivers, feeding on the ſmaller ſhell-fiſh, and other vermes. It is not a common bird in England.

11. Scolopax *limoſa*. Stone Plover. The bill inclining to turn up at the point, red at the baſe; feet browniſh; on the flag-feathers, a white ſpot; the four firſt quil-feathers without ſpot.

Inhabits the north of Europe. B.

This is a gregarious bird; but is ſeldom ſeen in flocks in England.

12. Scolopax *lapponica*. Red Godwit. Bill inclined to turn upwards at the point; the feet black; the under ſide wholly of a red ferruginous caſt.

Inhabits America and Europe. B.

This ſpecies goes in flocks; its fleſh is very delicate. It is not common in Britain.

13. Scolopax *ægocephala*. Common Godwit. Bill ſtraight; feet greeniſh; head and neck reddiſh; three flag-feathers black, white at the baſe.

Inhabits America, Aſia, and Europe. B.

SCOLOPAX.

These birds appear in small flocks on our coasts in September, and continue the whole winter; they walk on the open sands, like the Curlew, and feed on insects. They are taken in the fens, and fattened, when they sell sometimes for five shillings a piece. They are a little larger than a Woodcock.

14. Scolopax *canescens*. Cinereous Godwit. Feet long and ash-coloured; the head, neck, and back, ash-coloured, mixed with white; the throat and breast ash-coloured, spotted with white.

Inhabits Lincolnshire. B.

This bird is about the size of a Greenshank.

15. Scolopax *cantabrigiensis*. Cambridge Godwit. Feet orange-coloured; the head, neck, and back, of a cinereous brown; belly white.

Inhabits near Cambridge. B.

This species is larger than the common Red-shank.

GEN. LI. TRINGA. Bill nearly cylindrical, as long as the head; nostrils linear; tongue slender; four toes; the back toe consisting of one articulation, and raised from the ground.

The birds of the preceding genus haunt marshy grounds, and walk on their four toes; the birds of this genus frequent the plains and shores, and hardly touch the ground with their back toe.

1. Tringa *pugnax*. The Ruff. The bill and feet red, the three lateral tail-feathers without spot, the face marked with granulated fleshy pimples.

Inhabits Siberia and Europe. B.

These birds breed in great numbers in the fens of Lincolnshire, and other parts of England, where they make a considerable article of commerce, being taken in nets, and fattened for the table; they appear early in Spring; they make their nest in a tuft of grass, and lay four eggs in the beginning of May. The males fight bitterly for the females, whence they have their trivial name. Their English name is derived from a ruff of long feathers which the males have round their neck. They disappear about Michaelmas.

1. Tringa

TRINGA.

2. Tringa *Vanellus*. The Lapwing. Feet red; a pendent creſt; the breaſt black.

Inhabits Europe. B.

Theſe birds, in a wild ſtate, feed on worms, and when tamed, they clear gardens of thoſe animals, and of ſnails; they make a neſt of dry graſs on the ground, and lay four eggs, which the female hatches, and with much addreſs diverts an enemy from approaching. When done breeding, they congregate, and leaving the moors and marſhes, betake themſelves to downs and ſheep-walks. Their fleſh and eggs are both reckoned delicacies for the table. In winter, they join in vaſt flocks, but are then very ſhy.

3. Tringa *Gambetta*. The Gambet. The bill and feet red, the body variegated with yellow and aſh-colour; below white.

Inhabits Europe. B.

This ſpecies is of the ſize of a Greenſhank, it cries like a Woodcock. It is not a common bird in England, but is ſometimes ſhot on the coaſt of Lincolnshire.

4. Tringa *Interpres*. The Turnſtone. Feet red, the body black, variegated with white and brown; the breaſt and belly white.

Inhabits Europe, Africa, and America. B.

This ſpecies is often found in the north of Scotland. It has its English name from its cuſtom of turning over ſtones to prey upon the inſects and worms that lurk below. It neſtles in the ſand, and lays three or four eggs; at the time of hatching, it will attack men and dogs when they approach its neſt, and has a note like that of the Sea Pie.

5. Tringa *maculata*. Spotted Sandpiper. Bill at the baſe, and feet red; body ſpotted; the eye-brows, and a double faſcia on the wings, white.

Inhabits Europe, and North America. B.

This is a bird of paſſage, and not frequently met with in Britain.

6. Tringa *cinerea*. Aſh-coloured Sandpiper. Body white below, feet of a dirty green, the head ſpotted with black: neck marked with dusky ſtreaks.

Inhabits Europe and North America. B.

Theſe

TRINGA.

Theſe birds appear on the coaſts of this kingdom in the winter time in large flocks.

7. Tringa *lobata*. Grey Phalarope. Bill ſubulated, bending at the point; feet pinnated; breaſt white, with waving lines.

Inhabits the north of Europe and Siberia. B.

Theſe birds have been frequently ſhot in Britain; but they are not common. They flock together in ponds in ſtormy weather; but when it is calm, they live apart.

8. Tringa *hyperborea*. Red Phalarope. Bill ſubulated, bending at the point; feet pinnated; breaſt aſh-coloured; the ſides of the neck of a bright ferruginous colour.

Inhabits Europe, America, and Aſia. B.

Theſe birds are of the ſize of the Purre. They go in pairs, and catch inſects in the water with their bill; they do not dive, and are but bad ſwimmers; they make their neſt on dry ground, and lay four eggs.

9. Tringa *ochropus*. Green Sandpiper. Bill dotted at the apex; feet greeniſh; back browniſh green; belly and outermoſt tail feathers white.

Inhabits Europe, North America, and Siberia. B.

This is a beautiful bird, but not common in Britain. Except in pairing time, it lives ſolitary; it is never ſeen near the ſea, but frequents rivers, lakes, and other freſh waters. It runs upon the ſhores, or ſkims the ſurface of the water; it utters a cry as it riſes, and ſometimes dives when purſued by the Buzzard. It feeds on the fry of ſmall fiſhes and worms. Though its fleſh taſtes ſomething of muſk, it is conſidered as a great delicacy. It is a bird of paſſage; it is not well known where it breeds.

10. Tringa *hypoleucos*. Common Sandpiper. Bill ſmooth; feet livid; body aſh-coloured, with black ſtreaks; white below.

Inhabits Europe, Siberia, &c. B.

This ſpecies has a loud piping note; and, in the night, it makes a noiſe like one crying or lamenting; it is a ſolitary bird, except in breeding time; it frequents rivers and pools of water, making its neſt in a hole in the bank, and laying five eggs; it moves its tail like the Wagtail.

11. Tringa

TRINGA.

11. Tringa *Canutus*. Knot. Bill ſmooth; feet aſh-coloured; quil-feathers ſerrated; the outermoſt tail-feather white, without ſpot.

Inhabits Europe, New York, &c. B.

Theſe birds are ſaid to derive their name from King Canute, who was fond of them at table. They are taken in great numbers on the coaſt of England, and fattened, and then by ſome preferred to Ruffs. They appear in Auguſt, and go away upon the firſt froſts.

12. Tringa *Cinclus*. The Purre. Bill and feet black; lores white; tail and rump grey; mixed with brown.

Inhabits Europe, Africa, America, and Siberia. B.

Theſe birds come in prodigious flocks on our ſea-coaſts during winter; in their flight, they appear like a white, or a duſky cloud, as they turn their backs, or their breaſts towards you. They leave this country in ſpring. Buffon ſays their eggs are large for the ſize of the bird, and that they lay them on the bare ſand. They were formerly a well known diſh at our tables under the name of Stints.

13. Tringa *puſilla*. Little Sandpiper. Bill and feet browniſh; body reddiſh below; the ſhaft of the outer tail-feathers white; the rump variegated.

Inhabits Dominica, and the North of Europe. B.

This is the leaſt of the genus, ſcarcely equalling a Hedge-ſparrow in ſize.

14. Tringa *Squatarola*. Grey Sandpiper. Bill black; feet greeniſh; body grey; white below.

Inhabits Europe, Carolina, Siberia, &c. B.

Theſe birds appear in ſmall flocks in the winter time; but are not common in England; their fleſh is very delicate. They do not confine themſelves to the ſea ſhores in other countries, but go pretty far inland.

15. Tringa *islandica*. Red Sandpiper. Bill and feet browniſh; body ferruginous underneath; the ſecondary flag-feathers white on the margin.

Inhabits Iceland. B.

Theſe birds ſometimes appear in great flocks on the coaſt of Eſſex.

GEN.

GEN. LII. CHARADRIUS. Bill ſomewhat cylindrical, obtuſe; noſtrils linear; feet formed for running; three toes.

The birds of this genus frequent the mouths of rivers, and the neighbourhood of torrents; and they ſeem to enjoy rainy weather.

1. Charadrius *Hiaticula*. The ringed Plover. Breaſt black; forehead blackiſh, with a ſmall white faſcia; the feet yellowiſh.

Inhabits America, Europe, &c. B.

Theſe birds frequent our ſhores in the ſummer, but are not numerous; at the approach of winter they diſappear. They make a neſt on the ground, and lay four eggs of a dull whitiſh colour. They are a ſolitary bird; and run very ſwiftly along the ſhores.

2. Charadrius *Morinellus*. The Dotterell. Breaſt of a ferruginous colour: a white linear faſcia on the eye-brows and breaſt; feet black.

Inhabits the north of Europe and Siberia.

Theſe are very fooliſh birds, but much eſteemed for the delicacy of their fleſh. They are migratory, and it is not known where they breed. There are two ſeaſons at which they remove; to wit, in April and Auguſt, when they leave the marſhes, and betake themſelves to the hilly parts of the country, for the ſake of beetles, which form the principal part of their food, along with worms, and ſmall land ſnails, the fragments of which, have been found in their ſtomachs.

3. Charadrius *pluvialis*. Golden Plover. Body black, with green ſpots; white below; the feet ash-coloured.

Inhabits Europe and America. B.

This elegant ſpecies is often found on our moors and heaths in the winter time in ſmall flocks. In the Orkney iſlands it is found in millions, and never entirely migrates. It breeds on ſeveral of our unfrequented mountains, and lays four eggs. It makes a ſhrill whiſtling noice, and may be enticed within ſhot by a ſkilful imitator of its note.

4. Charadrius *Calidris*. The Sanderling. Bill and feet black; the lores and rump greyiſh; the under ſide of the body white, without ſpot.

Inhabits

CHARADRIUS.

Inhabits North America, the Caſpian ſea, &c. B.

Theſe birds are found in flocks on the coaſt of Cornwall, and others of our ſhores. It is a ſmall ſpecies, weighing little more than an ounce and three quarters.

5. Charadrius *Oedicnemus*. Stone Curlew. Grey, with two of the quill-feathers black, white in the middle; bill acute; feet aſh-coloured.

Inhabits Europe, Africa, and the eaſt. B.

This bird has its trivial name from its legs, which are ſwelled as with the gout. It runs over the downs and in the fields with the ſwiftneſs of a grey-hound; it ſtops ſuddenly, holding its body and head motionleſs. It never goes near waters or marſhes. It feeds on inſects and ſmall ſnails. It is ſolitary and ſilent during the day; but at night it is active and clamorous. It lays two eggs on the bare ground; the young are hardly to be diſtinguiſhed from the ſtones in which they generally harbour. When flying, theſe birds ſtretch out their feet ſtraight behind like a Heron.

6. Charadrius *Himantopus*. Long-legged Plover. White, back black, bill black, longer than the head, feet red and very long.

Inhabits Egypt, Europe, &c. B.

The legs of this ſpecies are three times the length of its body, and very weak and ſlender. Its manners are not well known, as it is a rare bird in Britain and even in Europe. It is migratory, and lives on flies.

GEN. LIII. RECURVIROSTRA. Bill flat and thin, ſubulated, recurved, acuminated, and flexible at the point; feet palmated, and three-toed; the back toe very ſhort and placed high; noſtrils narrow and pervious; tongue ſhort.

Of this ſingular genus there are three ſpecies, of which the following only is a native of Europe:

Recurviroſtra *Avocetta*. The Avoſet. Variegated with black and white.

Inhabits Europe. B.

Theſe birds are frequent in the winter on ſome of the ſhores of this kingdom. They feed on worms and inſects,

RECURVIROSTRA.

particularly the Cancer *Pulex* and *Locuſta*, which they ſcoop with their bills out of the ſand. They are of the ſize of a Lapwing, but taller. They run by means of their long legs over ſhores covered 5 or 6 inches with water. In all their movements they are lively, alert, and volatile; and difficult to catch. They breed on the ſhores of Poitou in France, and lay two eggs, which are conſidered as a delicacy by the inhabitants.

GEN. LIV. HÆMATOPUS. Bill compreſſed, wedge-ſhaped at the point; noſtrils linear; tongue a third part ſhorter than the bill; three toes, unconnected; feet formed for running.

Of this genus there is but one ſpecies.

Hæmatopus *Oſtralegus*. The Sea-Pie.

Inhabits Europe, America, &c. B.

Theſe birds are very frequent on moſt of our ſhores. They feed on marine inſects, oyſters, limpets, &c. which they take by inſinuating their wedge-ſhaped bill between the ſhell and the rock to which the animal adheres. In ſummer they keep in pairs to breed, laying 4 eggs on the bare ground. The young are eaſily tamed. In winter they aſſemble in vaſt flocks, and are very ſhy.

GEN. LV. GLAREOLA. Bill ſtrong, ſhort, ſtraight, crooked at the point; noſtrils placed at the baſe of the bill, linear and oblique; the gape wide; four long and ſlender toes, connected at the baſe by a web; tail forked; tail feathers 12.

Glareola *auſtriaca*. Auſtrian Pratincole. Of a brownish grey colour above; a black collar; chin and throat white; breaſt and belly of a reddiſh grey.

Inhabits Germany, Alſace, &c.

This bird feeds on worms and aquatic inſects. It is clamorous and reſtleſs. It lays about 7 eggs.

GEN. LVI. FULICA. Bill convex; the upper mandible

FULICA.

ble arched over the under one; the under one gibbous behind the apex; noſtrils oblong; forehead bald; four toes, ſomewhat pinnated. (Plate III. fig. 11.)

The Fulicæ haunt waters and ſtreams, living on aquatic vermes, inſects, and ſmall fiſhes. They approach the genus Rallus in the compreſſed form of their body; their bill is thick, inflected towards the point, the upper mandible is the longeſt, with a callus extending up the forehead; their tail and wings ſhort. They form two ſections: the one containing the birds with unconnected toes; theſe approach to the Ralli, and have the upper mandible membranaceous at the baſe, with concave wings: the other have their toes ſurrounded by a crenated membrane with equal mandibles; noſtrils oval, narrow, and ſhort.

* *With unconnected toes.* Water Hens.

1. Fulica *chloropus*. Common Water-hen. The forehead tawny; the armilla red; the body blackiſh.

Inhabits Europe. B.

Theſe birds feed on aquatic plants and ſmall fiſhes. They build in low trees and ſhrubs by the water ſide; breeding twice or thrice in the ſummer. They lay 7 eggs. They ſtrike with their bill like a hen, and in ſpring have a ſhrill call. In flying they hang down their legs; in running they often flirt up their tail and ſhew the white feathers; and though they are not web-footed they ſwim very well.

** *With pinnated feet.* Coots.

2. Fulica *atra*. Common Coot. With fleſh-coloured forehead; the armilla yellow; the body blackiſh.

Inhabits Europe, Aſia, and America. B.

The Coot frequents lakes and ſtill rivers, feeding on the ſmaller fiſhes, aquatic inſects, and the ſeeds and even roots of ruſhes. In breeding time it pairs, and in thoſe waters that are filled with reeds and ruſhes, it makes a floating neſt of their leaves, and lays 14 or 15 eggs. The fleſh of the young is eatable. Coots are much infeſted by the Buzzard. In winter they often repair to the ſea.

FULICA.

3. Fulica *aterrima*. Greater Coot. Forehead white, the armilla red, the body blackiſh.

Inhabits Europe. B.

This ſpecies differs from the former only in ſize, and in the ſuperior blackneſs of its plumage. It is found both in England and in Scotland.

GEN. LVII. VAGINALIS. Bill ſtrong, thick, conical, and compreſſed; the upper mandible covered above with a horny vagina; noſtrils ſmall, placed before the vagina; face naked with pimples; feet ſtrong, and made for running.

Vaginalis *alba*. White Sheathbill.

Inhabits New Zealand.

This is the only ſpecies of this genus. It is a gregarious bird, of the ſize of a pigeon, and feeds on ſhell-fiſh and dead carcaſes.

GEN. LVIII. PARRA. Bill nearly cylindrical, and obtuſe; noſtrils ovated, in the middle of the bill; a caruncle upon the forehead; the caruncles lobated; ſpines upon the alula.

The birds of this genus are all natives of America, Aſia, or Africa.

Parra *Chavaria*. Faithful Jacana. With long toes; tawny feet; the hind part of the head with a creſt.

Inhabits the neighbourhood of the river Cinu about 30 leagues from Carthagena.

This bird feeds on graſs. It walks with ſlow and ſolemn pace. It flies eaſily, but cannot riſe unleſs by half flying. It ſwims well though its feet are not webbed. It has two or three ſpines at each wing, which are thick, very hard, half an inch long, and concealed, unleſs when the wings, which are very long and ſtrong, are completely expanded; theſe are its weapons. It is at war with the rapacious birds and attacks them firſt. It is more than a match for the Vultur Aura. The Americans, who feed numbers of poultry, have tamed only

PARRA.

only the Chavaria, which goes abroad with the reſt, and never leaves them, though it can fly, but returns home in the evening. It allows itſelf to be touched by a grown perſon, but defends itſelf againſt children.

GEN. LIX. RALLUS. Bill thickeſt at the baſe, compreſſed, attenuated towards the point, equal and acute; noſtrils ovated; 4 toes unconnected; the body compreſſed.

The birds of this genus have the bill a little inflected; ſmall noſtrils; tongue rough; and the tail very ſhort.

1. Rallus *Crex*. The Rail. The wings of a red ferruginous colour.

Inhabits Europe, Syria, &c. B.

This well known bird (called Corn Crake in Scotland) frequents corn, graſs, broom or furze; and lives on ſeeds and inſects. It runs very ſwiftly, but flies heavily, with its feet hanging down. In the evening and during the night it is clamorous, frequently repeating its note *crex, crex;* it may be allured by the ſound made by blowing on a comb with paper interpoſed. It makes a neſt in moſs or dry graſs, laying from 12 to 16 eggs. Its fleſh is excellent. It is the harbinger of ſummer. It begins to be heard about the middle of May, and it continues its note during the breeding ſeaſon. It then migrates.

2. Rallus *aquaticus*. The Water-rail. The wings grey, with brown ſpots; the ſides ſpotted with white; the bill below tawny.

Inhabits Europe and Siberia. B.

This ſpecies, like the former, runs very ſwiftly. It frequents the borders of ſtagnant waters and brooks. It keeps itſelf concealed among tall graſs and ruſhes. It ſwims well, and runs along the ſurface of the water, over the broad leaves of the Nymphæa. Like the former ſpecies, it is not eaſily ſprung. It migrates, and has been found in April at ſea, 50 leagues from the coaſt of Portugal.

3. Rallus *Porzana*. Spotted Rail. The two innermoſt tail feathers with white margins; the bill and feet of a dull olive.

Inhabits Europe, Siberia, and North America. B.

This

RALLUS.

This ſpecies is a ſolitary bird, frequenting the banks of rivers, and concealing itſelf among the reeds; where it makes its neſt in the ſhape of a boat, of ruſhes, fixing one end of it to the reeds, and laying 7 or 8 eggs. It is leſs than the *Crex*, and migrates.

GEN. LX. PSOPHIA. Bill conical, convex, acute, the upper mandible longeſt; noſtrils oval and wide; tongue cartilaginous and fimbriated at the point; 4 toes, unconnected.

Pſophia *crepitans*. Gold-breaſted Trumpeter. Head and breaſt ſmooth, and of a ſhining green colour.

Inhabits the Caribbee iſles.

This bird is of the ſize of a Curlew, but thicker and ſhorter. Its voice is hoarſe; its note, two or three times repeated, ſeems as if proceeding from the bottom of a hollow drum. It may be tamed. Its fleſh reſembles that of the pheaſant.

ORDER V. GALLINÆ.

THIS Order contains the domeſtic poultry and the birds akin to them. Their bills are convex, and the upper mandible is arched and ſhuts over the edges of the lower. Their noſtrils are half covered with a convex cartilaginous membrane. (See Plate III. fig. 2.) They have more than 12 feathers in the tail. They have four toes, which are joined at the baſe as far as the firſt joint, by a ſtrong membrane. (*ſemi-palmati*, ſee Plate III. fig. 12.) Their claws are broad, the toes ſcabrous below, formed for ſcratching up the ground. In moſt ſpecies the males have ſpurs on the legs; their food is the ſeeds of plants chiefly, but they likewiſe eat inſects, grubs, and worms, which are macerated in their crop. Their

fleſh

fleſh is delicate and wholeſome. They are polygamous. They build rude neſts, for the moſt part on the bare ground, and the females lay many eggs at a time. They collect their young about them by a particular call when they feed them, and they lead and protect them till they moult. They are eaſily tamed; and are uſeful both by their fleſh, their eggs, and their feathers. *

GEN. LXI. OTIS. Bill ſomewhat convex; noſtrils oblong, pervious; tongue bifid and acute; feet formed for running, long, naked above the knees; three toes.

1. Otis *Tarda*. The Buſtard. Head and throat of the male with a creſt on each ſide.

Inhabits the old world. B.

This is the largeſt of European birds. It frequents chiefly uncultivated countries, as it is timid and of a ſolitary diſpoſition, except at the time of migration. It runs ſwiftly, flies ſlowly, feeds on ſeeds, herbage, and worms. It has the ſenſes of ſeeing and hearing exceedingly acute. It makes its neſt in the neighbourhood of a corn field, by ſcraping a hole with its feet in the ground, and lays two eggs, on which it ſits for 30 days. The fleſh, particularly of the young, when kept a little time is excellent. Under the tongue is the orifice of a kind of ſack, in which this bird can carry about ſeven Engliſh pints of water.

2. Otis *Tetrax*. The little Buſtard. The head and throat without any creſt.

Inhabits Europe. B.

This ſpecies is like the former, timid and ſtrong. It is polygamous,

* Though the Gallinæ, of all birds, are moſt coveted for their fleſh and their eggs; it is worthy of remark, that no bird has hitherto been diſcovered whoſe fleſh is of a poiſonous nature, though many of them are unfit for food; and that all eggs are ſafe, though they vary conſiderably in taſte, and ſome of them are greatly preferable to others.

OTIS.

lygamous, and the male pugnacious. It runs with great ſwiftneſs. It migrates; feeds on green corn, ſeeds, ants, and beetles. In June it lays from 3 to 5 eggs, and the young are able to fly in Auguſt. The fleſh is blackiſh, but of an exquiſite flavour.

GEN. LXII. STRUTHIO. Bill ſomewhat conical; noſtrils ovate; wings unfit for flying; feet formed for running.

1. Struthio *Camelus*. The Oſtrich. With only two toes.

Inhabits Africa and ſome parts of Aſia.

The Oſtrich is the largeſt of known birds, being 8 feet long, and 6 or 8 feet high, and weighs about 75 or 80 pounds. It is very ſtrong and the ſwifteſt of animals. It is able to run with a full grown man on its back, and ſo ſwiftly as almoſt to ſuffocate an unſkilful or weak rider. It cannot fly. It lives on vegetables, but will ſwallow with impunity hard bodies and even iron, though it does not digeſt them. It lays in one year to the number of 50 eggs in the ſand, which are equal in ſize to a child's head, where they are hatched by the heat of the ſun during the day, and by the incubation of the female in the night. The Arabs make uſe of its ſkin as leather; and its feathers are uſed at preſent, and were formerly even by the Roman ſoldiers, as ornaments.

2. Struthio *Caſuarius*. The Caſſowary. With three toes; a naked creſt and wattles.

Inhabits Aſia, within the torrid zone.

This bird is about 5½ feet long; it is very bold; and kicks with its feet like a horſe; it grunts like a hog; it lives on vegetables, which it ſwallows whole; it lays eggs, which are narrower and longer than thoſe of the Oſtrich; it runs very ſwiftly, but cannot fly.

GEN. LXIII. DIDUS. Bill contracted in the middle, with two tranſverſe wrinkles; both mandibles inflected at the apex; noſtrils oblique, near the margin of the middle of the bill; face bare beyond the eyes;

DIDUS.

eyes; feet, ſhort, thick, and cloven; wings unfit for flight; no tail.

Didus *ineptus*. The Dodo. Black; clouded with white; feet with 4 toes.

Inhabits the iſles of France and Bourbon.

This ſingular bird is larger than a Swan; it is ſluggiſh and unwieldy, and walks ſlowly; its fleſh is eatable. Its hiſtory is little known.

GEN. LXIV. PAVO. Head with a creſt of feathers turning forwards; bill convex and ſtrong; noſtrils large; the feathers of the tail elongated, broad, expanſile, and adorned with eyes.

Pavo *criſtatus*. The Peacock. The creſt compreſſed; ſpurs ſingle.

Inhabits Africa and Aſia, chiefly India.

The Peacock is undoubtedly the moſt beautiful of birds. It has been known in Europe ſince the days of Alexander the Great; and has been long domeſticated in Britain. Its voice is ill accommodated to ſo fine a form, being a harſh diſcordant ſcream. It feeds on wheat, barley, peaſe, &c. and is killed by the flowers of the Elder; while young it eats meal and inſects. It always rooſts on high, and is a proud and quarrelſome bird. In a retired place it lays 5 or 6 eggs, which it hatches in 27 or 30 days. The young acquire the perfect beauty of their plumage in the third year. It lives 25 years. Aged females ſometimes acquire the plumage of the male.

GEN. LXV. MELEAGRIS. Bill ſhort and ſtrong; head covered with ſpongy caruncles; a membranaceous, longitudinal caruncle at the throat; tail broad and expanſile.

Meleagris *Gallopavo*. The Turkey. With a caruncle on the forehead and at the throat; a briſtly tuft on the breaſt of the male.

Inhabits America.

There is but this ſpecies of the genus hitherto known.

MELEAGRIS.

The Turkey needs no deſcription. In its wild ſtate it lives during the day in woods, feeding on acorns; in the night it rooſts on the higheſt trees, in marſhy places, eating grain and likewiſe inſects. While young it eats garlic and the nettle. It is killed by the Fox-glove, (*Digitalis purpurea.*) It is iraſcible, and cannot endure a red colour. It is eaſily hurt by hunger and by rain. The male ſtruts with inflated breaſt and ſpread tail; his face grows red and the caruncle on his forehead is relaxed and changes colour. The female in the ſpring lays a conſiderable number of eggs. The fleſh of the Turkey is delicate.

GEN. LXVI. PENELOPE. Bill naked at the baſe; head covered with feathers; throat bare; twelve tail-feathers; toes in moſt ſpecies without claws.

Penelope *cumanenſis*. The Yacou. Black; the creſt and greater coverts of the wings white.

Inhabits Guiana.

This ſpecies is of the ſize of a Turkey-hen; it erects its creſt, expands its tail, and cries like a young Turkey, in a mournful tone; it builds on the ground; is eaſily tamed, and is often domeſticated in Cayenne and Guiana.

GEN. LXVII. CRAX. Bill ſtrong and thick, covered with a cere at the baſe of both mandibles, or gibbous; noſtrils ſmall, placed in the cere; the feathers which cover the head, turn ſpirally forward; tail large and ſtraight.

Crax *Alector*. The creſted Curaſſow. Cere yellow; body black; belly white.

Inhabits the warmer parts of America.

This bird is eaſily tamed; and is accordingly, on account of its fleſh, which is white and delicate, often domeſticated in South America, and the neighbouring iſlands. It is of the ſize of a ſmall Turkey; it lives on fruits, and rooſts on trees.

GEN.

GEN. LXVIII. PHASIANUS. Bill ſhort and ſtrong; cheeks naked and ſmooth; ſpurs for the moſt part on the legs.

1. Phaſianus *Gallus*. The Cock. With a compreſſed caruncle (comb) on the crown of the head, and a double one at the throat; ears naked; the tail compreſſed and aſcending.

Inhabits the woods of India.

This is the origin of our common domeſtic poultry, which differs ſo multifariouſly in colour, comb, feet, feathers, and ſize, ariſing from difference of food, climate, and manner of life. It is ſpread over the whole world; it collects the fallen ſeeds of graſs and corn; ſcrapes up worms with its feet, and ſhews them to its young. The Cock is a pugnacious bird; it ſtruts with its high creſt, and its erect and falcated tail; it is watchful, and crows clapping its wings; it is the poor man's clock. The hen will lay eggs the whole year, provided ſhe has plenty of food and cold water, gravel, and a warm place. After laying, ſhe has a peculiar note of triumph and exultation; her heat is increaſed while hatching; if put into cold water ſhe ceaſes to ſit. Poultry are hurt by Elder berries; and they are freed of vermin by giving them pepper. They duſt their feathers, to kill the vermin which infeſt them.

2. Phaſianus *colchicus*. The Pheaſant. Red; head blue; tail wedge-ſhaped; papillæ on the cheeks.

Inhabits Colchis.

This bird, it is ſaid, was brought from the iſland of Colchis by the Argonauts. It is domeſticated over all the antient world, and is ſubject to great variation. At the ſeaſon of love, there is, above the ears, a tuft of gold-coloured feathers, like horns. The flight of theſe birds is ſhort; they have the voice of the common Cock nearly; they neſtle on the ground, and lay from twelve to fifteen eggs; they feed on acorns, berries, grain, and ſeeds of plants. They have always been conſidered as a great delicacy at table.

3. Phaſianus *Argus*. The Argus Pheaſant. Of a yellowiſh colour dotted with black; the face red; the hind part of the head with a blue creſt.

Inhabits China and Sumatra.

PHASIANUS.

This is a moſt beautiful bird, though its colours are not brilliant. Its tail is very long, and the ſecondary feathers of its wings are almoſt equal in length to the tail, ſo that when they are expanded, they form a large circle; the feathers of the tail are 14, and they are ſometimes three feet long, dark-coloured, with white ſpots.

4. Phaſianus *pictus*. The Golden Pheaſant. With a yellow creſt; a ſcarlet breaſt; the ſecondary flag-feathers blue; the tail cuneated.

Inhabits China.

This ſpecies is leſs than the common Pheaſant. It is eaſily tamed, and accommodates itſelf to a foreign climate. It is domeſticated in Britain, where it breeds freely. In manners, food, and habit, it very much reſembles the firſt ſpecies.

5. Phaſianus *nyctthemerus*. The Silver Pheaſant. White, the creſt and belly black; the tail cuneated.

Inhabits China.

This ſpecies, except in colour, very much reſembles the former ſpecies, and is equally eaſily tamed.

GEN. LXIX. NUMIDA. Bill ſtrong and ſhort, at the baſe furniſhed with a naked fleſhy cere, in which are the noſtrils; head horned, the neck compreſſed and coloured, and both bare of feathers; tail ſhort, and turning down; the body ſpotted.

Numida *Meleagris*. The Guinea hen. With a double caruncle at the corner of the mouth; without any fold at the throat.

Inhabits Africa.

Theſe birds are now frequent in Europe. They were known to Ariſtotle, and are well deſcribed by Clytus, a diſciple of his, under the name of Meleagris. They were common in the Vivaria of the Romans. They are larger than a large Cock; they are eaſily tamed, and lay a great number of eggs, from 20 to 27; they take little care of their young, and often abandon them,

GEN. LXX. TETRAO. A ſpot near the eyes, either naked, or warty, or thinly covered with feathers.

The birds of this genus have a ſtrong convex bill; their fleſh, and the eggs of moſt of them, are good to eat; their young follow the mother as ſoon as they are hatched, even with pieces of the ſhell adhering to them. The birds of the firſt three ſections, viz. Grous, Partridges, and Quails, agree in having a ſhort convex bill. The Grous are inhabitants of the colder regions chiefly, nature having fortified them againſt the effects of cold; their noſtrils are ſmall, and hid under the feathers; they have an acute tongue, ſtrong feet, and a pretty long tail. Partridges and Quails are leſs in ſize; their tail is ſhort, their noſtrils are covered above with a callous prominent margin; they inhabit the temperate, and even warmer climates. The Tinamous are a tribe peculiar to Guiana, and approach the Pheaſant in manners; their bill is longer, obtuſe at the apex; the noſtrils are placed in the middle; their gape is very wide; their throat thinly covered with feathers; their tail very ſhort; the back toe ſhort, and uſeleſs for running; the nails concave below; in this tribe, the female is groſſer than the male. The bill of the Quails is longer than that of the Partridges.

The four ſections of this order are thus characteriſed:

* *A naked ſpot above the eyes; the legs feathered.* Grous.
** *A warty ſkin round the eyes; the feet bare; ſpurs on the legs of the male.* Partridges.
*** *A warty ſkin round the eyes; the feet bare; no ſpurs.* Quails.
**** *A ſpace round the eyes covered thinly with feathers; the feet bare, without ſpurs.* Tinamous.

* *Grous.*

1. Tetrao *Urogallus*. Cock of the Wood. Tail rounded; the axillæ white.

Inhabits the northern parts of Europe and Aſia. B.

This fine bird was formerly an inhabitant of the Pine foreſts in the North of Scotland, but is now rare, if not extinct. It is of the ſize of a Turkey; it lives on the berries of the Juniper and Vaccinium, and on the ſeeds of the Pine tribe, and other trees. It is a ſolitary bird, except in the ſeaſon of love, when, at the beginning of February, perched on the top of

TETRAO.

of a tree, it calls the females about it, with a loud voice, its tail expanded, its wings hanging down to its feet, its neck ſtretched out, and the feathers of its head erected. The female builds on the ground among moſſes, and lays from eight to ſixteen eggs. The fleſh of this ſpecies is much eſteemed, and its eggs are accounted preferable to thoſe of every other bird.

2. Tetrao *Tetrix*. The Black-cock. Tail bifurcated; the ſecondary flag-feathers white towards the baſe.

Inhabits the northern parts of Europe and Siberia. B.

This ſpecies frequents heaths, and woods of Birch and Poplar; it is often, during winter, buried beneath the ſnow; it feeds on the tops of heath, acorns, and the ſeeds of the Birch and Tacamahac Poplar; it is killed by eating cherries or peaſe; it flies often in flocks, and perches on trees like a Pheaſant. The male is very quarrelſome. In ſpring, it animates the foreſt with its crowing, and the females aſſemble round it. The hen ſeldom lays more than ſix or ſeven eggs. The young males quit their mother in the beginning of winter, and keep in flocks of ſeven or eight till ſpring.

3. Tetrao *Lagopus*. The Ptarmigan. Aſh-coloured; the toes feathered; the flag-feathers white; the tail-feathers black, white at the tips; the intermediate ones white.

Inhabits Siberia, and the northern and mountanous parts of Europe. B.

This ſpecies is common in the mountains of the northern parts of Europe. It abounds in the Highlands of Scotland, and in the Hebrides. It lives among the rocks and ſtones, from which it can hardly be diſcovered, on account of its colour. Ptarmigans are ſilly birds, and ſo tame, as to bear driving like poultry. If provoked to riſe, they take very ſhort flights, making a ſmall circuit like Pigeons. They keep upon the tops of the mountains, living on inſects, the buds of trees, the young ſhoots of pines, on the Erica, Empetrum, Rhododendron, on the fruits of other alpine ſhrubs, and on berries; they run ſwiftly, and fly heavily; and are impatient of the ſun and wind; they cannot be tamed; they lay from ſix to ten eggs; the fleſh of the young is accounted a great delicacy.

4. Tetrao

TETRAO.

4. Tetrao *Attagen*. Red Grous. Head and neck light tawny red; back and ſcapulars deeper red; flag-feathers duſky; tail feathers black; the four intermediate ones barred with red.

This is made a variety of the former ſpecies in the Syſtema Naturæ, and does not ſeem to be well known to foreign Naturaliſts, being almoſt peculiar to the northern parts of the Britiſh iſlands. In Scotland, the birds of this ſpecies are called Moorfowl. They pair in the ſpring, and lay from ſix to ten eggs. The young follow the hen the whole ſummer; in winter, they join in flocks of 40 or 50, and become remarkably ſhy. They generally keep on the hills, feeding on the mountain berries and tops of heath.

5. Tetrao *Umbellus*. The ruffed Heathcock. With a ruff on the hind part of the neck.

Inhabits North America.

This bird feeds on ſeeds, fruits, and berries, particularly thoſe of the ivy. The female lays from twelve to ſixteen eggs. In ſpring, the male has a very ſingular way of calling the hens around him. He perches on the ſtump or branch of a fallen tree, and claps his wings together, at firſt leiſurely, but afterwards with increaſed velocity, and ſo loud, that the ſound, in a calm day, may be heard at a mile's diſtance. This is done at ſunriſe and ſunſet, and the noiſe betrays the bird to the hunters.

* * *Partridges.*

6. Tetrao *Perdix*. The Partridge. A naked ſcarlet ſpot under the eyes; tail ferruginous; breaſt brown; feet whitiſh.

Inhabits Europe and Siberia. B.

The Partridge feeds on green corn, ſeeds, inſects, and particularly the pupæ of ants; it breeds, for the moſt part, once a year, in a cavity on the ground, lined with a few dried leaves; it lays from fifteen to eighteen eggs, on which the hen ſits for three weeks. In winter it lives below the ſnow, making paſſages, with ſpiracula at both ends.

* * * *Quails.*

7. Tetrao *Coturnix*. The Quail. Body greyiſh and ſpotted; eye-brows white; the margin of the tail-feathers, and a lunated ſpot on them, ferruginous.

Inhabits

TETRAO.

Inhabits the whole antient world. B.

Quails are birds of paſſage, ſome leaving the country altogether, others only ſhifting their habitation; in ſpring northwards, in autumn ſouthwards. They live on grain; they utter their note the whole night over. They breed once a year, and lay ſix or ſeven whitiſh eggs, with ruſty ſpots; the males are ſo bold, that they were kept for fighting by the Athenians, and are ſo ſtill in China. Their bodies are ſo remarkably hot, that the Chineſe hold them in their hands in cold weather to warm them. They are good eating; but if fed on the ſeeds of Hellebore, they are ſaid to produce convulſions.

Of the 4th diviſion there is no Britiſh ſpecies.

ORDER VI. PASSERES.

THE birds of this Order are diſtinguiſhed by their conical, acuminated bill; their noſtrils are generally naked and oval. (Plate III. Fig. 1.) Their feet are formed for walking or hopping; they live, ſome at the time of breeding, and others conſtantly, in monogamy. Some feed on the ſeeds of plants, and in that caſe they have a ſhort bill; others on inſects and worms, and theſe are generally furniſhed with a longer bill. They neſtle on trees, in buſhes, in houſes, and on the ground. They often build very artificial neſts, and feed their young with their bill. The Order contains all the ſinging birds: the males are the ſongſters. They are in general eatable.

GEN. LXXI. COLUMBA. Bill ſtraight, declining towards the point; noſtrils oblong, half covered with a ſoft and tumid membrane; tongue white.

The birds of this genus have a weak and ſlender bill, ſhort feet, and many of them red toes divided to their origin; they are

COLUMBA.

are found even in the arctic regions; they drink much, and not at intervals like other birds, but by continual draughts, like quadrupeds; their note is plaintive or mournful; they are the connecting link between this Order and the former; but are moſt nearly allied to the Paſſeres in being monogamous, in paying court to each other with their bills, in the male and female alternately hatching, in both joining to feed the young, in laying but few eggs, and in their nidification. There are 71 ſpecies belonging to the genus, only 3 of which are natives of Britain.

1. Columba *Oenas*. Common Pigeon. Aſh-coloured; upper part of the neck of a ſhining green; a faſcia upon the wings and the tip of the tail blackiſh.

Inhabits Europe and Siberia. B.

This bird is in many places wild, but is kept in Pigeon-houſes every where, and is the parent ſtock whence all the varieties of the domeſtic Pigeon are derived, and is therefore called the Stock-dove. It builds in towers, in caverns of rocks, and in cliffs in unfrequented iſlands. On the approach of winter, it migrates ſouthward. It is gregarious; it lays two eggs, and breeds ſeveral times in the year.

2. Columba *domeſtica*. Domeſtic Pigeon. Aſh-coloured, the rump white; the faſcia on the wing and the tip of the tail white.

Inhabits Europe, Aſia, and Barbary. B.

Of the domeſtic Pigeon, 21 varieties are enumerated and deſcribed in the Syſtema Naturæ. They breed from 9 to 11 times in the year, and lay two eggs, of which one in general produces a male, the other a female. The male and female incubate by turns; and feed their young by bringing up the grain they have taken into their crop, after it has been macerated there. Their fleſh is improper for melancholy people. One of the varieties, the Carrier pigeon, (Columba *tabellaria*), was formerly uſed in carrying letters to the place where it had young, being let fly from a place whither it had previouſly been carried.

3. Columba *Palumbus*. The Ring Dove. The tail-feathers black; the quil-feathers whitiſh on the exterior margin; the neck white on the ſides.

Inhabits the woods of Europe. B.

COLUMBA.

This is the largeſt of the Britiſh pigeons. It builds in trees, making its neſt of dry ſticks; it is large and open; the eggs are larger than thoſe of the common Pigeon, and after 14 days hatching the young appear. In winter they aſſemble in large flocks, and leave off cooing, which they begin again in March, when they pair.

4. Columba *Turtur*. The Turtle Dove. The tail feathers white at the point; the back grey; the breaſt fleſh-coloured, with a black ſpot on the ſide of the neck, and whitiſh lines.

Inhabits Europe, China, and India. B.

The Turtle is a very ſhy and retired bird, breeding in thick woods, and making its neſt in very high trees; it lays two eggs. It is very deſtructive to fields of peaſe.

5. Columba *migratoria*. The paſſenger Pigeon. The orbits naked and blood red; the breaſt reddiſh.

Inhabits North America.

Theſe birds breed in the more northern parts of America and continue till December, when they migrate ſouthward in queſt of food. The multitudes which paſs in hard winters is immenſe. They fly by millions in a flock, and in their paſſage literally intercept the light of the ſun. As ſoon as one flock has paſſed another ſucceeds, and each flock takes a quarter of an hour to paſs. This ſometimes continues for three days, without intermiſſion. They return in March. Their favourite food is acorns, but they not only eat the fruit of many other trees, but likewiſe corn and rice, and in their paſſage commit great devaſtation on the fields.

GEN. LXXII. ALAUDA. Bill cylindrically ſubulated, ſtraight; the mandibles equally long, opening a little at the baſe; tongue bifid; the nail of the back toe nearly ſtraight, and longer than the toe.

1. Alauda *arvenſis*. The Sky-Lark. The two outermoſt tail-feathers on the outſide whitiſh lengthways; the intermediate ones ferruginous on the inner ſide.

Inhabits the whole antient world. B.

The Sky-Lark is not much larger than a Spar-

ALAUDA.

row. It ſings as it flies; it begins early in ſpring and continues in ſong for ſeveral months. It is heard,

From its watch-tower in the ſkies,
Ere the dappled dawn doth riſe.

It builds on the ground, under ſome clod, and lays 4 or 5 eggs. It lives on ſeeds, ants, and other inſects. In winter, Larks aſſemble in large flocks, grow very fat, and are taken in nets for the table. They are ſaid, however, to be noxious to people labouring under calculous complaints.

2. Alauda *pratenſis*. The Tit-Lark. Above of a greeniſh brown colour; the two outermoſt tail-feathers white on the outſide; a white line above the eyes.

Inhabits Europe. B.

The Tit-Lark is found frequently in low marſhy grounds. It builds its neſt among graſs, ſtrengthening it with horſes hair. It lays 5 or 6 eggs. It feeds on ſeeds and inſects. It is leſs than the Sky Lark. It ſits on trees, and utters its delightful notes in all ſituations, whether on trees, on the ground, or in the air.

3. Alauda minor. Leſſer Field-Lark. Of a reddiſh brown colour; the two extreme tail-feathers white on the outſide.

Inhabits Europe. B.

This ſpecies is larger than the Tit-Lark; and differs otherwiſe from it in having the feet browniſh, and the claw on the hind toe very ſhort for a Lark.

4. Alauda *arborea*. Wood-Lark. The head encompaſſed with a white annular belt.

Inhabits Europe, Siberia, Kamtſchatka, &c. B.

This ſpecies is likewiſe leſs than the Sky-Lark. It perches on trees, and whiſtles like the Blackbird. It ſings as it flies, and ſometimes during the night. It builds on the ground, and makes its neſt on the outſide with moſs, within of dried bents lined with a few hairs. It lays 5 eggs, and breeds twice a year. It is not ſo common as the former ſpecies.

5. Alauda *rubra*. The Red Lark. Brown; the arch of the eyes black; the two outermoſt tail-feathers white.

Inhabits North America and England. B.

This bird is common in the neighbourhood of London; but ſeems to be rare in other places.

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6. Alauda *trivialis*. The Graſshopper Lark. The tail-feathers brown; the outermoſt brown and white; the ſecond wedge-ſhaped at the tip; two white lines on the wing.

Inhabits Europe. B.

The note of this bird is like that of the Graſshopper, but louder and ſhriller. In the height of ſummer it chirps the whole night. Its ſibilous note ceaſes about the latter end of July.

7. Alauda *nemoroſa*. Leſſer creſted Lark. Tail-feathers black; the two outermoſt white on the external margin; the head creſted; the feet red.

Inhabits Italy, Auſtria, &c. B.

This ſpecies is common in Yorkſhire. It is a ſolitary bird, and builds in woods and thickets.

GEN. LXXIII. STURNUS. Bill ſubulated, angulated, depreſſed, and ſomewhat obtuſe; the upper mandible very entire, with the margins a little open; noſtrils marginated above; tongue emarginated, acute.

1. Sturnus *vulgaris*. The Starling. The bill yellowiſh; the body black, dotted with white.

Inhabits the whole antient world. B.

The Starling feeds on inſects, earth-worms, ſeeds, berries, &c. It migrates in flocks. It is noiſy, and mimics ſounds of different kinds, but without much taſte, as it will imitate the creaking of a door as ſoon as the beſt muſical melody. It may be taught to ſpeak. It breeds in hollows of trees or rocks, among rubbiſh or in pigeon holes; making its neſt of leaves and other dry materials, or ſeizing on the neſt of ſome other bird; it lays 5 or 6 eggs. In Orkney it breeds among the rocks in myriads; in winter feeding on the *Cancer Pulex*.

2. Sturnus *Cinclus*. The Water Ouzel. Black; the breaſt white.

Inhabits Europe, Siberia, and Perſia. B.

This bird frequents waters, and betakes itſelf in winter to catarracts and ſprings which do not freeze, where, in a wonderful

STURNUS.

derful manner, not being web-footed, it deſcends the rapid torrents, devouring the aquatic oniſci and other inſects, and diving after them. In winter it is ſolitary; in ſummer it is generally accompanied by its mate. It feeds entirely on inſects, not at all on ſeeds. It is diſtinguiſhed from the Motacilla genus in its noſtrils being almoſt cloſed by a little plate; it moves its tail; it makes its neſt on the ground in the banks, of hay and the dried fibres of plants, lining it with dry oak-leaves, and fortifying its wide entrance with moſſes; it lays 5 eggs.

GEN. LXXIV. TURDUS. Bill cylindrically cultrated; the apex of the upper mandible deflected and emarginated; noſtrils naked, half covered above with a ſmall membrane; the corners of the mouth ciliated; tongue emarginated and jagged.

All the ſpecies of this genus feed on berries, eſpecially thoſe of the juniper. They are middle ſized birds, and ſome of them excellent ſongſters.

1. Turdus *viſcivorus*. The Miſſel Thruſh. The back brown; the neck white ſpotted; the bill yellowiſh.
Inhabits Europe. B.

This is the largeſt of all ſong birds. It lives on the berries of the miſsletoe, holly, yew, and hawthorn, and likewiſe on inſects and their larvæ. In ſpring, ſitting on the top of a tree, it makes the woods reſound with its fine ſong. Twice in the year it breeds, making its neſt in thickets and ſhrubbery, of moſſes, lichens and dry leaves, lining it with withered graſs, and fortifying it on the outſide with ſmall ſticks; it lays 4 or 5 eggs. The antients believed that the miſsletoe (the baſis of birdlime) could not be propagated but by the berries which had paſt through the body of this bird; and on that founded the proverb, *Turdus malum ſibi cacat.*

2. Turdus *pilaris*. The Fieldfare. The tail-feathers black; the interior margin of the outermoſt white at the tips; the head and rump hoary.
Inhabits Europe, Siberia, and Syria. B.

This is one of our winter birds, conſequently it does not breed here. It comes about Michaelmas and leaves us about the beginning of March. It comes to Orkney in autumn in its

TURDUS.

its route ſouthward. It appears in Southamptonſhire about 30th September and ſtays there for a fortnight. On its return, it comes to the ſame place in the middle of April and ſtays a week. Though it builds in trees, and ſits on trees in the day time, it always roofts on the ground. It builds in high trees, and lives on the berries of the holly, thorn, juniper, Empetrum *nigrum*, Arbutus *alpina* and Uva *Urſi*. This bird is the Turdus of the antients; the Romans in their aviaries fed it with great attention, and when fattened eſteemed it highly, though, according to Varro and Plutarch, the fleſh was ſometimes bitter.

3. Turdus *iliacus*. The Redwing. The wings ferruginous underneath; the eye-brows whitiſh.

Inhabits Europe. B.

This ſpecies is alſo a winter gueſt with us, and appears a few days before the Fieldfare. It migrates in vaſt flocks. It breeds in Sweden, where it inhabits the woods which abound in maple trees, and ſings delightfully from their higheſt tops. It builds in thickets or hedges, and lays 6 eggs. In the ſouthern countries it does great injury to the vineyards.

4. Turdus *muſicus*. The Mavis or Throſtle. The flag-feathers ferruginous on the inſide at the baſe.

Inhabits Europe. B.

This ſpecies in colours very much reſembles the Miſſel Thruſh; but is leſs. It is the fineſt of our ſong birds, and continues longeſt in ſong, as it breeds ſometimes thrice in the year. In a fine evening in ſpring it vies with the nightingale. It builds in thickets and low ſhrubs, making its neſt of earth, moſs, and ſtraws, and plaiſtering it on the inſide with clay. It lays 5 or 6 eggs. Beſides berries, it feeds on worms, caterpillars, inſects, and ſnails.

5. Turdus *roſeus*. Roſe Ouzel. Carnation-coloured; the head, wings, and tail, black; the hind-head creſted.

Inhabits Europe, Siberia, Syria, &c.

This is a migrating ſpecies; it is of the ſize of the Starling, and is ſometimes met with in Britain.

6. Turdus *Merula*. The Blackbird. Of a black colour, the bill and eyebrows of a tawny yellow.

Inhabits Europe. B.

The Blackbird frequents woods and thickets, and in ſummer

TURDUS.

mer approaches gardens and comes near houſes; at other times it is ſolitary, timid, and reſtleſs; it diſſeminates the ſeeds of the juniper. In the beginning of ſpring it ſings with a ſweet and very loud voice. It is eaſily tamed, and then it imitates other ſounds, even that of a man's voice; and the notes it once learns it never forgets. It builds in hedges; its neſt is made of ſtraw, moſſes, and dry graſs, plaiſtered internally with clay, and ſtrewed with hay; it lays 4 or 5 eggs, and breeds twice or thrice in the ſeaſon.

7. Turdus *torquatus*. The Ring Ouzel. Blackiſh; a white creſcent on the under part of the neck; the bill yellowiſh.

Inhabits Europe, Aſia, and Africa. B.

Theſe birds migrate in ſome places; but in the Highlands of Scotland and in Wales they breed and continue there the whole year. They are larger than a Blackbird. They feed on inſects and berries. When fat their fleſh is much eſteemed. They build on the ground at the root of ſome ſhrub, making a neſt like that of the Blackbird, and laying 4 or 5 eggs.

GEN. LXXV. AMPELIS. Bill ſtraight, convex; the upper mandible longeſt, ſomewhat incurved, and emarginated on both ſides; noſtrils covered with briſtles; tongue acute, cartilaginous, and bifid.

The birds of this genus are all natives of the warmer parts of America, except the following ſpecies.

Ampelis *Garrulus*. The Bohemian Chatterer. The hind-head creſted; the ſecondary flag-feathers membranaceous at the apex and coloured.

Inhabits Europe, Aſia, and America. B.

This bird is of the ſize of a large lark. It migrates in flocks, and is often ſeen in the neighbourhood of Edinburgh in the month of February, where it feeds on the berries of the mountain aſh. In its native places it feeds on grapes and other berries. Its fleſh is excellent. It builds in the caverns of rocks. It is remarkable for the horny red appendages at the tips of 7 of its flag-feathers.

GEN.

GEN. LXXVI. COLIUS. Bill ſhort, thick, convex above, flat below, the upper mandible curved downwards; noſtrils ſmall, at the baſe of the bill, almoſt covered with feathers; tongue fringed at the point; tail long and cuneiform.

Colius *capenſis*. Cape Coly. The outer tail-feathers externally white; body aſh-coloured, whitiſh below.

Inhabits the Cape of Good Hope.

This bird is of the ſize of a Chaffinch. The reſt of the genus are all African birds.

GEN. LXXVII. LOXIA. Bill conical and gibbous, rounded at the baſe of the forehead next the head; the under mandible inflected at the margin; noſtrils ſmall and round at the baſe of the bill; tongue entire.

1. Loxia *curviroſtra*. The Croſs-bill. Red; the bill forked.

Inhabits Europe and the northern parts of Aſia and America. B.

This is a ſingular bird. It lives on the ſeeds of the pine tribe, the alder, and even of the apple, and with its bill extracts them from the cones and ſeed veſſels. It builds in the branches of the talleſt trees; making its hemiſpherical neſt of twigs, and of the Sphagnum *arboreum* in the coldeſt months of winter, two inches and a half thick, lining it with the Lichen *oridus*, and ſtopping up the chinks with roſin. It is the only bird known in nature that has the mandibles of its bill croſs-ways, and it can turn the upper mandible either to the right ſide or to the left. It may be tamed.

2. Loxia *Coccothrauſtes*. The Groſs-beak. With a white line on the wings; the middle flag-feathers rhomb-ſhaped at the tips; the tail-feathers black on the inſide.

Inhabits Europe. B.

This bird lives on the kernels of the almond, walnut, and cherry, breaking with the greateſt eaſe their hard ſtones with its bill: it is thus injurious to gardens. It builds its neſt about

LOXIA.

about 12 feet from the ground, at the divarications of the branches of trees, of dried fibres, and lays 5 eggs.

3. Loxia *Enucleator*. Pine Groſsbeak. With two white lines on the wings; all the tail-feathers wholly black.

Inhabits the north of Europe, Aſia, and America. B.

This ſpecies lives chiefly on the ſeeds of pines, which it alſo diſſeminates. It ſings excellently, and during the night, but ſoon ceaſes. It builds in trees, pretty near the ground, a neſt of ſmall ſticks, and lines it with feathers; it lays 4 white eggs.

4. Loxia *Pyrrhula*. The Bulfinch. The feet black; the coverts of the tail and of the hinder flag-feathers white.

Inhabits Europe and Siberia. B.

In ſummer the Bulfinch inhabits woods; in winter it frequents gardens and orchards, and is injurious to the trees. It has a ſimple note in its wild ſtate, which is not unpleaſant: when tamed it is docile, and may be taught pretty long melodies, and even human ſpeech. It makes its neſt of moſſes in ſhrubs, about 5 or 6 feet from the ground; and about the end of May lays 5 or 6 eggs.

5. Loxia *Chloris*. The Greenfinch. Of a yellowiſh green colour; the quil-feathers yellowiſh before; the four lateral tail-feathers yellowiſh at the baſe.

Inhabits Europe and Kamtſchatka. B.

This is a very common bird; and it is eaſily tamed, if held on ones finger in the dark and treated gently. It builds in thickets and low hedges, making its neſt of withered graſs, hair, wool, &c.; and lays 5 or 6 eggs, on which the male and female ſit alternately. It is not muſical. It is allied to the following genus, but its bill is thicker. In winter it is gregarious.

GEN. LXXVIII. EMBERIZA. Bill conical; the mandibles at the baſe ſtand a little diſtant from each other; the under one at the ſides bent in and ſtraightened; the upper one the narroweſt.

1. Emberiza *nivalis*. Snow Bunting. The flag-feathers

EMBERIZA.

white; the quil-feathers black on the outſide; the three lateral ones white.

Inhabits the north of America, Aſia, and Europe. B.

This bird keeps in the higheſt latitudes of the northern hemiſphere during ſummer; but in winter travels ſouthward, at leaſt in Europe, flying in immenſe flocks. It is of the ſize of a Chaffinch. It builds in the fiſſures of rocks; its neſt is conſtructed of graſs and feathers, and lined with the hair and wool of the Arctic Fox, (Canis *lagopus*); it lays 5 eggs. It ſings well, ſitting on the ground; it feeds on grain, and is wakeful in the night. It is taken in vaſt multitudes in winter, as it is then fat, and its fleſh delicate. It breeds in ſome of the mountains of Scotland.

2. Emberiza *muſtelina*. The Tawny Bunting. The flag-feathers black, white at the baſe, the laſt wholly white; the tail-feathers black; the intermediate ones white on the margin; the three lateral ones white on both ſides, marked externally with a black ſpot.

Inhabits America, Aſia, and Europe. B.

This ſpecies is probably but a variety of the preceding.

3. Emberiza *montana*. Mountain Bunting. The 5 quil-feathers of a blackiſh brown colour; the reſt white, with brown ſpots at the tips; the tail-feathers brown, the three lateral ones on both ſides wholly white.

Inhabits England. B.

This ſpecies is found in Yorkſhire and Northamptonſhire, but is not common.

4. Emberiza *Miliaria*. The Bunting. Brown, ſpotted with black below, the orbits red.

Inhabits Europe. B.

This bird in autumn and winter is gregarious. It is of the ſize of a Yellow-hammer. It lays 5 or 6 eggs in the graſs; and while the hen is employed in incubation the male ſits on the branch of a neighbouring tree and cheers her with his rude ſong.

5. Emberiza *Hortulana*. The Ortolan. The flag-feathers brown; the three firſt white on the margin: the tail-

EMBERIZA.

tail-feathers brown; the two lateral ones black on the outſide.

Inhabits Europe.

The Ortolan is a little larger than the Yellow-hammer. It migrates from Italy to Sweden and to Siberia. It is taken and fattened in a dark place with millet or oats for the table, as it is accounted delicious food. It ſings during the night. It breeds twice a year, building in low hedges, or on the ground like the Lark, and lays 4 or 5 eggs.

6. Emberiza *Citrinella*. The Yellow-hammer. The tail-feathers blackiſh; the two outermoſt marked on the inſide with a white acute ſpot.

Inhabits Europe. B.

This ſpecies is an innocent ſtupid bird. It has but little ſong. It lives on ſeeds and inſects. It breeds ſeveral times in the year, building on the ground, or in a low buſh, a neſt made of hay, ſtraw, a few moſſes, dried leaves, and bits of ſticks, and lining it with hair or wool; it lays 4 or 5 eggs.

7. Emberiza *oryzivora*. The Rice-bird. Black, the neck reddiſh, the belly black, the tail feathers pointed.

Inhabits Cuba.

Theſe birds feed on the early crops of rice in the iſland of Cuba; but when the rice of Carolina begins to ripen they quit Cuba and proceed to the province of Carolina in amazing multitudes, where they do incredible miſchief. They arrive there in September while the rice is yet milky, and when it grows hard they return. What is ſurpriſing the birds that thus migrate are all females. Both ſexes, however, make a tranſient viſit to Carolina in the ſpring.

8. Emberiza *Schoeniclus*. Reed-Sparrow. The head black; the body grey and black; the outer tail-feathers marked with a white cuneiform ſpot.

Inhabits Europe and the ſouthern parts of Siberia. B.

This bird frequents marſhy places, moſt commonly among reeds. Its neſt is faſtened to 4 reeds, and ſuſpended by them like a hammock about 3 feet above the water; the cavity of the neſt is deep but narrow, and the materials are ruſhes, fine bents, and hair. It lays 4 or 5 eggs. It lives on the ſeeds of arundines, and ſings during the night.

9. Emberiza *chlorocephala*. Green-headed Bunting. Brown: the head and neck olive-coloured; the back ar

EMBERIZA.

coverts of the wings brown and black mixed; the tail forked.

Inhabits England. B.

This is a very uncommon bird; having been only once or twice taken in the neighbourhood of London.

GEN. LXXIX. TANAGRA. Bill conical, acuminated, emarginated, three-ſided at the baſe, declining at the point.

This genus contains 46 ſpecies, the whole of which are foreign.

Tanagra *Jacapa*. Red breaſted Blackbird. Black; the forehead, throat, and breaſt, ſcarlet.

Inhabits America.

This bird is found chiefly in South America, and in general two together in gardens and in the neighbourhood of houſes. It lives on fruits. It makes a cylindrical neſt of dried fibres and leaves, lining it with larger leaves, and ſuſpending it from the horizontal branch of a low tree, with the entrance undermoſt. It lays two white eggs.

GEN. LXXX. FRINGILLA. Bill conical, ſtraight, acuminated.

1. Fringilla *cælebs*. The Chaffinch. The wings and tail black; the flag-feathers black, their exterior ſides edged with white; the three firſt not ſpotted; the outermoſt tail-feathers marked obliquely with white.

Inhabits Europe, Madeira, Africa, &c. B.

The Chaffinch continues in this country the whole year, but in Sweden the females migrate ſouthward in winter. It builds its neſt in a leafy ſhrub, not high above the ground, forming it of the fibres of plants and of moſſes, lining it with hair, wool, and feathers; it lays 5 or 6 eggs.

2. Fringilla *montifringilla*. The Brambling. The baſe of the wings very yellow underneath.

Inhabits Europe and Siberia. B.

Theſe birds are ſeen in the neighbourhood of Edinburgh in hard winters. They frequent the pine foreſts in the Highlands, and live on the ſeeds of the beech and other trees. They

FRINGILLA.

They build in trees; their neſt is formed of Hypnums without, and of wool and feathers within; they lay 4 or 5 eggs. Their fleſh is eatable, though frequently bitter.

3. Fringilla *Carduelis*. The Goldfinch. The outer vanes of the flag-feathers yellowiſh; the outermoſt feather without ſpot; the two outermoſt tail-feathers white in the middle, the reſt white at the points.

Inhabits Europe. B.

This beautiful bird is ſubject to great variation. It is gregarious in winter. It lives to a great age. It ſings delightfully even in a cage. It is docile and eaſily tamed. It breeds with the Canary and other congenerous birds, and the females thus produced are capable of breeding. It lives on ſeeds, chiefly of the thiſtle, hemp, and plants of the natural Order of *Capitatæ*. It builds an artificial neſt often in the branches of fruit trees, compoſed of ſlender moſſes, lichens, and thiſtle down, wool and hairs, and of the pappus of willows; it lays 5 eggs.

4. Fringilla *Canaria*. The Canary bird. The bill and body of a yellowiſh white colour; the tail and flag-feathers greeniſh.

Inhabits the Canary iſlands.

This bird is well known over all Europe. It lives long, ſings excellently; is docile, and breeds with the Fr. *Serinus*, *Carduelis*, *Spinus*, and *Citrinella*; the female likewiſe with the Fr. *Linota*, *Cælebs*, *domeſtica*, and even with the Emberiza *Citrinella*. It lives chiefly on the ſeeds of the Phalaris *canarienſis*, but beſides on thoſe of the Cannabis, Myagrum, Braſſica *Napus*, and Avena. The Canary was brought to Europe from the Canary iſlands about the beginning of the 16th century.

5. Fringilla *Spinus*. The Siſkin. The flag-feathers yellowiſh in the middle; the four firſt without ſpot; the tail-feathers yellow at the baſe, black at the tips.

Inhabits Europe. B.

The Siſkin is about the ſize of a Linnet. It lives on the ſeeds of juniper, alder, hop, &c. It ſings, is docile, and eaſily tamed. It breeds on the banks of the Danube and in Provence, but conceals its neſt with ſo much art that it has never been diſcovered.

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FRINGILLA.

6. Fringilla *Cannabina*. The greater Redpole. The quil and tail-feathers black, the margins white.

Inhabits Europe. B.

Theſe birds frequent the ſea-coaſts. They are very familiar, and ſo eaſily tamed as to be cheerful in five minutes after they are taken. They ſing the whole year.

7. Fringilla *Linota*. The Linnet. Reddiſh brown; of a reddiſh white below; the feathers of the head aſh-coloured at the margins; a browniſh line on both ſides the throat, edged with white; a white longitudinal ſpot on the wings; the tail-feathers browniſh; the intermediate ones reddiſh on the margin; the margins of the reſt white.

Inhabits Europe. B.

The Linnet is gregarious in winter. It lives on ſeeds, particularly of the Linum, or flax. It builds in low ſhrubs, ſuch as the white thorn, the ſloe, &c.; its neſt is made of dried plants, graſs, and moſs, and lined with wool and hair; it lays 5 eggs. It is one of the beſt of our ſong birds.

8. Fringilla *Linaria*. The leſſer Redpole. The flag and tail-feathers brown, their margins of a dirty white, a white ſtreak on the wings.

Inhabits Europe, Aſia, and America. B.

This bird is about half the ſize of the Greater Redpole. It lives on the ſeeds of the alder, the catkins of which it cleaves, and it builds in the trunk of the tree a neſt made of dry ſticks and wool, lining it with hair and feathers, and laying 4 eggs.

9. Fringilla *domeſtica*. The Sparrow. The flag and tail-feathers brown; the body mixed with grey and black, a ſingle white faſcia on the wings.

Inhabits Europe, Syria, &c. B.

Sparrows keep near the habitations of men, living on ſeeds and fruits, and are therefore noxious to gardens; they avoid the ſnares laid for them with more cunning than their congeners. In autumn they are often gregarious, but oftener in winter, and then they flock upon trees. They do not ſing except when tamed, and then the cock will imitate the ſong of a Linnet, or other bird within hearing. They build without much care a neſt of hay and down, or occupy that of other birds, and breed three times in the year.

10. Fringilla

FRINGILLA.

10. Fringilla *montana*. The Mountain Sparrow. The ſtag and tail-feathers brown; the body grey mixed with black; a double white faſcia on the wings.

Inhabits Europe and Siberia. B.

This ſpecies is leſs than the laſt. It builds in trees, and after breeding is gregarious. It is the *pipilans* of Latham.

GEN. LXXXI. PHYTOTOMA. Bill conical, ſtraight, ſerrated; noſtrils ovate; tongue ſhort and obtuſe.

Of this genus there is but one ſpecies.

Phytotoma *rara*.

Inhabits Chili.

This bird is about the ſize of a Quail. Its note is a hoarſe and interrupted cry. It feeds on green plants, which it crops cloſe to the roots with its bill as with a ſaw, and is therefore very hurtful to gardens and deteſted by the inhabitants. It builds in thick unfrequented woods, and lays white eggs.

GEN. LXXXII. MUSCICAPA. Bill almoſt three-ſided, emarginated on both ſides, incurved at the point; with ſpreading vibriſſæ near the fauces; noſtrils nearly round.

The birds of this genus live on inſects, particularly flies. It contains 92 ſpecies, of which only two are Britiſh.

1. Muſcicapa *atricapilla*. The Pied Fly-catcher. Black; with a white ſpot on the forehead, and a white ſpeculum on the wings; the lateral tail-feathers white on the outſide.

Inhabits Europe. B.

This is a rare bird in Britain. It breeds in hollow trees, making its neſt of a few fibres and moſſes, and lays 6 eggs.

2. Muſcicapa *Griſola*. The Spotted Fly-catcher. Browniſh, below whitiſh; the neck longitudinally ſpotted; the vent-feathers reddiſh.

Inhabits Europe. B.

Theſe birds breed in England, but migrate in Auguſt. They live on flies; but alſo eat cherries. Their neſt is made of moſſes, or wool and fibres, in holes of trees or walls; they lay 4 or 5 eggs.

GEN. LXXXIII. MOTACILLA. Bill ſubulated, ſtraight; the mandibles of nearly equal length; noſtrils obovate; tongue cloven.

Moſt of the Motacillæ feed on inſects; a few are gregarious; and therefore at the approach of winter they migrate ſouthward to warmer climates. It is a very numerous genus, containing upwards of 170 ſpecies.

1. Motacilla *Luſcinia*. The Nightingale. Of a reddiſh aſh-colour; the armillæ aſh coloured.

Inhabits Europe and Aſia. B.

The Nightingale is a ſolitary bird, and the moſt celebrated ſongſter of our climates. It ſings in the night, particularly in ſpring; it is eaſily tamed; it builds in thickets and low leafy hedges; its neſt without conſiſts of dry leaves, graſs, and fibres; within of hair and wool; it breeds three or four times in the year, laying 4 or 5 eggs each time; it lives on the larvæ of ants and other inſects. It is hardly found in Britain north of Yorkſhire; it viſits England in the beginning of April and retires in Auguſt.

2. Motacilla *modularis*. The Hedge Sparrow. Greyiſh-brown above, the coverts of the wings white at the tips; the breaſt of a bluiſh aſh colour.

Inhabits Europe. B.

The Hedge-Sparrow has a ſhort, but very ſweet plaintive note, which it continues during the whole winter. It makes its neſt in ſome ſmall buſh, and lays 4 or 5 eggs.

3. Motacilla *Hippolais*. The Pettychaps. Of a greeniſh aſh-colour, yellowiſh below, the belly whitiſh; the wings and tail brown; the eye-brows whitiſh.

Inhabits Europe. B.

This bird is leſs than the Linnet. It makes its neſt below a turf of moſſes and feathers, and lays 5 white eggs.

4. Motacilla *ſalicaria*. The Reed-Sparrow. Aſh-coloured, white below, the eye-brows white.

Inhabits Europe. B.

This bird ſings moſt part of the night. Its notes are hurrying, but not unpleaſing, and imitative of ſeveral birds; as the Sparrow, Swallow, Sky-Lark, &c. It harbours among reeds and willows, and builds its neſt on the undermoſt branches of trees, of ſtraw and the dried fibres of plants, lining it with hair; it lays 5 eggs.

5. Motacilla

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5. Motacilla *Sylvia*. The White Throat. Cinereous above, white underneath; the firſt tail-feather white on the exterior ſide, the ſecond white at the tip.

Inhabits Europe. B.

This ſpecies frequents hedges, and migrates in winter. It lives chiefly on inſects, but likewiſe eats figs and olives. It makes its neſt of moſſes and dry ſtraw, and builds about 3 feet above the ground; it lays 5 eggs. Its note is harſh and diſpleaſing.

6. Motacilla *provincialis*. The Dartford Warbler. Reddiſh brown, ferruginous underneath; the middle of the abdomen, the margin of the flag-feathers, the ſpurious wings, and the exterior vanes of the outer tail-feathers, white; the eyelids red.

Inhabits Provence. B.

A pair of theſe were ſhot on a common near Dartford in April 1773. They feed on flies; and are but little larger than the golden-creſted Wren.

7. Motacilla *alba*. The white Wagtail. The breaſt black, the two lateral tail-feathers black and white.

Inhabits the whole antient world. B.

This ſpecies frequents waters, and feeds on aquatic inſects. It runs ſwiftly. Makes its neſt on the ground of dry graſs and the ſmall fibres of roots and moſſes, lining it with hair or feathers, and once a year lays 5 eggs. It perpetually moves its tail, like a number of the other ſpecies of this genus. It migrates to the ſouthern parts of the iſland in winter, and returns in the ſpring.

8. Motacilla *flava*. The yellow Wagtail. The breaſt and belly yellow; the two lateral tail-feathers half white.

Inhabits Europe, Aſia, and Madeira. B.

This ſpecies makes its neſt on the ground in corn fields; the outſide is compoſed of decayed ſtems of plants and ſmall fibres of roots, the inſide is lined with hair; it lays 5 eggs. It migrates in the north of Britain, but remains in Hampſhire the whole year.

9. Motacilla *Oenanthe*. The Wheat-ear. Back hoary, forehead white, a black faſcia at the eyes.

Inhabits Aſia and Europe. B.

MOTACILLA.

Wheat-ears frequent open ſtony places, warrens, downs, &c. They breed in ſtone walls, old rabbit holes, or under ſtones; their neſt is large, made of dry graſs, rabbits down, feathers, and horſe hair; they lay from 6 to 8 eggs. In autumn they are fat and eſteemed a delicacy; as they feed on inſects and earth-worms, they are fatter in a wet than in a dry ſeaſon. They come in March, the females a fortnight ſooner than the males, and diſappear in September.

10. Motacilla *Rubetra*. The Whin-chat. Blackiſh; the eye-brows white; a white ſpot on the wings; the throat and breaſt yellowiſh.

Inhabits Europe. B.

In the northern parts of the iſland the Whin-chat ſhifts its quarters, in the ſouthern it remains the whole year. It is a little larger than the Stone-chat, which in its nidification it reſembles.

11. Motacilla *Rubicola*. The Stone-chatter. Greyiſh; reddiſh underneath; a white faſcia on the throat; the lores black.

Inhabits Europe and Siberia. B.

This bird frequents hedges and dry places, ſometimes in winter migrating to moiſter places for the ſake of food; it is reſtleſs and cunning; it makes its neſt early in ſpring, under a ſtone, or in low thickets, and lays 5 or 6 eggs.

12. Motacilla *atricapilla*. The Black-cap. Of a brick colour, cinereous underneath; the crown of the head blackiſh.

Inhabits Europe. B.

This is one of the ſmalleſt birds of this genus; it is a bird of paſſage and leaves us before winter. It is a very agreeable ſongſter. It feeds on inſects; likewiſe on the berries of the Daphne, the ivy, and mountain-aſh. It makes its neſt in a low ſhrub, near the ground, of bits of dry ſticks, a little wool, and green moſs, lining it with the fibres of roots and horſe hair; it lays 5 eggs.

13. Motacilla *Phoenicurus*. The Redſtart. The throat black, the belly and tail red, the head and back of blue grey.

Europe. B.

ſtart is ſeen in this country only in ſpring and builds in hollow trees, in holes of walls, and even

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even of houſes, and lays 4 or 5 eggs. It ſings prettily, and imitates the notes of other birds. It is leſs than the Red-breaſt. It moves its tail horizontally.

14. Motacilla *arundinacea*. The Reed Wren. Of a browniſh olive above, whitiſh below; the lores and orbits of a whitiſh brown, the tail brown and nearly cuneated, the under part of the toes of a greeniſh yellow.

Inhabits near Uxbridge. B.

This ſpecies is but a little larger than the golden-creſted Wren. It makes its neſt between 3 or 4 reeds, the ſtalks of which ſeem to pierce it; the outſide conſiſts of the dry ſtalks of graſſes, the inſide of the panicles of the reeds or withered graſs, and a few horſe hairs; it lays 4 eggs.

15. Motacilla *Rubecula*. The Red-Breaſt. Of a deep aſh colour; the throat and breaſt red.

Inhabits Europe and Madeira. B.

In ſummer the Red-Breaſt dwells in woods, and in winter and ſpring near houſes. It is a ſolitary bird; it is tame and familiar with man. Its ſong is exceedingly ſweet, and we enjoy it during winter. It is quarrelſome, and two are never ſeen on one tree. Beſides inſects, it is fond of the ſeeds of the Euonymus. It builds in thickets, and ſometimes in the walls of outhouſes. Its neſt is made of dried leaves, hair, and moſſes, and lined with feathers; it lays from 5 to 7 eggs; and the young continue ſpotted till September.

16. Motacilla *Troglodytes*. The Wren. Of a deep reddiſh brown colour; the wings undulated with black and aſh colour.

Inhabits Europe and Aſia. B.

The Wren is one of our fineſt ſong birds; and it ſings during the winter except in froſts. Its tail ſtands nearly erect. It breeds twice a year, making its neſt in thickets, the trunks of trees, on the ground, or in holes of walls near houſes; it is oval, very deep, with a ſmall hole in the middle; externally it is formed of moſſes, and lined with feathers; it lays from 10 to 18 eggs.

17. Motacilla *Regulus*. The golden-creſted Wren. The ſecondary flag-feathers yellow on the outer mar-

MOTACILLA.

gin; white in the middle; the crown of the head yellow.

Inhabits the whole known world. B.

This is the leaſt of Britiſh birds. It migrates from the Shetland iſles in winter, but continues in Orkney the whole year. Its ſong is like that of the common Wren, but its voice is weaker. It builds a neſt nearly of a round form, with a hole in the ſide; it lays from 6 to 8 eggs. Its golden creſt it can raiſe and depreſs at pleaſure.

18. Motacilla *Trochilus*. The yellow Wren. Of a greeniſh aſh-colour; the underſide of the wings and the tail-feathers yellow; the eyebrows yellowiſh.

Inhabits Europe, Aſia, and America. B.

This bird frequents willows, along the branches of which it runs, like a Tit-mouſe, in ſearch of inſects. It ſings little, except in breeding time. It builds in the hollows of rocks, trees, or banks; its neſt is round, formed without of moſſes, within of wool, hair, or feathers; it lays 5 eggs.

19. Motacilla *baarula*. The grey Wagtail. Aſh-coloured above, yellow below; the outermoſt tail-feather white, the ſecond white on the inſide.

Inhabits Europe. B.

This ſpecies frequents moiſt places, ſtreams, and rivers. In Sweden, during the whole ſummer, it accompanies the cattle, collecting the Conops *calcitrans* and C. *irritans*, on which it feeds. It makes its neſt on the ground by water ſides, externally of dried fibres and moſſes; internally of hair, feathers, and wool; it lays from 6 to 8 eggs.

GEN. LXXXIV. PIPRA. Bill ſhorter than the head, ſtrong, hard; nearly triangular at the baſe, entire and incurved at the point; noſtrils, in moſt, naked; feet formed for walking.

There are 26 ſpecies of this genus; but none of them are natives of Europe.

Pipra *Rupicola*. Creſted Manakin. With an erect creſt, purple on the edges; body ſcarlet; the coverts of the tail truncated.

Inhabits South America.

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PIPRA.

This bird frequents rocks and their caves and fiſſures; it is of the ſize of a ſmall pigeon. It is timorous and afraid of man; but when taken young may be tamed. It lives on the ſmaller fruits. Its manners are ſimilar to thoſe of the Gallinæ. It builds in the ſecret receſſes of rocks, forming its neſt of little dry ſticks, and laying two round white eggs.

GEN. LXXXV. PARUS. Bill intire, narrow, ſomewhat compreſſed, ſtrong, hard, acuminated, and covered with briſtles at the baſe; tongue truncated, terminated with ſetæ; toes unconnected; the hind one large and ſtrong.

The ſpecies of this genus are very prolific, ſome of them laying at one time from eighteen to twenty eggs; they live on ſeeds, fruits, inſects; and a few even on fleſh; and many on the brain of other birds. They are reſtleſs, and by no means timid, for they often kill weaker birds, and attack thoſe that are three times larger than themſelves. Their voice in general is unpleaſant.

1. Parus *major*. Great Titmouſe, or Ox-eye. The head black; the temples white; the neck yellowiſh.

Inhabits Europe, Aſia, and Africa. B.

The Great Titmouſe is of the ſize of a Chaffinch. It frequents gardens; but, in breeding time, keeps among woods; it breeds twice or thrice a year in hollow trees, and lays from eight to twelve eggs.

2. Parus *cæruleus*. The blue Titmouſe. The flag-feathers bluiſh; the quil-feathers white on the outer margin; the forehead white; the crown of the head blue.

Inhabits Europe. B.

This ſpecies is hurtful in gardens, by plucking off the young fruit-buds, in queſt of the inſects that lurk under them; but is moſt uſeful in devouring ſuch inſects and their larvæ; it builds in the hollows of walls, or trees, once a year, and lays from fourteen to twenty-two ſmall eggs.

3. Parus *ater*. The Colemouſe. The head black; the back

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back aſh-coloured; the hind head and breaſt white.

Inhabits Europe, Siberia, and North America. B.

This ſpecies is leſs than the *cæruleus*; it frequents orchards and gardens.

4. Parus *paluſtris*. The marſh Titmouse. The head black; the back aſh-coloured; the temples white.

Inhabits Europe and Siberia. B.

This ſpecies is ſomewhat larger than the preceding, which in manners it very much reſembles. It collects a proviſion of ſeeds and is fond of bees.

5. Parus *caudatus*. Long-tailed Titmouſe. The crown of the head white; the tail longer than the body.

Inhabits Europe, Siberia, &c. B.

This ſpecies is remarkable among its congeners for the length of its tail. It frequents gardens and orchards, and is injurious to the trees by pulling off the buds; it is active, reſtleſs, and volatile, and runs upon trees like the Woodpeckers. Its neſt is of an oval ſhape, and about eight inches deep; near the upper end, is a hole for admiſſion; the external materials are moſſes and lichens, curiouſly interwoven with wool; within, it is lined with the ſofteſt down; it lays from ten to ſeventeen eggs.

6. Parus *biarmicus*. The bearded Titmouſe. The crown of the head grey; the tail longer than the body; the cheeks tufted.

Inhabits Europe. B.

This ſpecies frequents marſhy places among reeds, on the ſeeds of which it lives. Its neſt is made of the tomentum of the Typha and Poplar, and is ſuſpended between three ſtalks of the Typha, like a bag, with two openings.

GEN. LXXXVI. HIRUNDO. Bill very ſmall, incurved, ſubulated, depreſſed at the baſe, and broad; the gape wider than the head; tongue ſhort, broad, and cleft; wings long; tail in general forked.

The birds of this genus are diſtinguiſhed from the reſt of this Order by their ſtructure, their twittering voice, and their man-

HIRUNDO.

manner of life. They ſeldom walk, but perform moſt of their functions on the wing, or ſitting. They fly with great rapidity and eaſe. They have a very wide mouth, by means of which they readily catch inſects in the air, or on the ſurface of water. The winter abode of theſe birds has been a ſubject of diſpute ſince the days of Ariſtotle, nor is it yet known whether they migrate or remain in a torpid ſtate during the winter in the places where they paſſed the ſummer.

1. Hirundo *ruſtica*. The Chimney Swallow. The tail-feathers, except the two middlemoſt, marked with a white ſpot.

Inhabits Aſia, Africa, America, and Europe. B.

This ſpecies is known from the reſt by the ſuperior forkineſs of its tail; in cold climates, it diſappears about the end of autumn, and returns in the ſpring. When it flies near the earth or the water, it preſages rain. It has a weak voice, but the ſong of the male is not unpleaſant. It builds in chimneys, frequently five or ſix feet down, or under the eaves of houſes, an open neſt made of clay, mixed with ſtraw and hair, and lined with feathers; it breeds twice in the ſeaſon, and lays from four to ſix eggs. Swallows appear in April, and ſometimes in March, and go away about the end of September, or beginning of October. It is ſuppoſed that they winter in Senegal.

2. Hirundo *eſculenta*. The eſculent Swallow. The whole tail-feathers marked with a white ſpot.

Inhabits China, and the iſlands in the Indian Ocean.

This is the ſpecies that produces the edible neſts, of which the Chineſe are ſo fond. Theſe neſts are built in crevices and caverns of rocks, of different ſpecies of Molluſca, and other marine gelatinous productions; it is ſomething like Iſinglas, and in figure reſembles a citron cut through the middle longitudinally. It is uſed as food in broths, though it is dirty and black.

3. Hirundo *urbica*. The Martin. The tail-feathers not ſpotted; the back of a bluiſh black; the whole under part white.

Inhabits Europe, Siberia, and North America. B.

This bird is eaſily known from the other Britiſh ſpecies, by the whiteneſs of its rump. It builds a cloſe neſt with a hole at top for admiſſion, made of ſtraw and clay, and lined with

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with feathers. It builds in windows, under the eaves of houſes, and the jutting ornaments of ſteeples and churches; it is "the temple-haunting Martlet" of Shakeſpeare, who ſays, that where theſe birds moſt breed and haunt, the air is wholeſome. It comes later than the preceding ſpecies, and ſtays later. It ſometimes breeds three times during the ſeaſon, and has been ſeen feeding its young ſo late as the 21ſt of October.

4. Hirundo *riparia*. The Sand Martin. Aſh-coloured; the throat and belly white.

Inhabits Europe, Siberia, and North America. B.

This ſpecies builds in ſand-banks, in which it makes a deep horizontal paſſage, and places its neſt at the end. It breeds but once a year, and lays five or ſix eggs. It may be known from the reſt by its ſmall ſize, and mouſe colour. It has been ſaid, that this ſpecies paſſes the winter in a torpid ſtate, at the bottom of lakes, among reeds.

5. Hirundo *Apus*. The Swift. Blackiſh; the throat white; all the four toes turned forwards.

Inhabits Europe, Aſia, America, and Africa. B.

The Swift is the largeſt of the Britiſh Swallows. It builds in towers and ſteeples, once a year, laying from two to five eggs. It lives on muſcæ, and other winged inſects; and as it ſometimes flies very high in the air, it is probable that it likewiſe finds food there, for Dr Liſter once diſcovered certain ſpecies of Spiders "exceeding high" above the top of the higheſt ſteeple in York Minſter, which were no doubt in queſt of flies. It may be taken with a line and hook bated with a Cicada. When it happens to fall on the ground, its feet are ſo ſhort, and its wings ſo long, that it cannot riſe. In the ſummer evenings, numbers of theſe birds flock together, and daſh round ſteeples and high towers, where their neſts are, with amazing velocity, uttering every now and then a loud ſcream. In the neighbourhood of Edinburgh, they do not retire in the month of June, till a quarter before ten o'clock at night, and they are abroad again ſoon after three in the morning.

This ſpecies undoubtedly migrates. It comes in May, and goes away ſo early as the 10th of Auguſt, remaining here no longer than is neceſſary for its breeding. It is not to be ſuppoſed that ſo active a bird, which flies with ſuch rapidity, and is almoſt 19 hours out of the 24 upon the wing, ſhould ſuddenly

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denly fall into a ſtate of torpidity, and remain in that ſtate for nearly nine months. It is remarkable, that it diſappears ſooneſt in the beſt and warmeſt weather. In ſuch ſeaſons, not a bird is to be ſeen after the 16th of Auguſt; but in the very inclement ſeaſon of 1782, numbers of them were ſeen in the neighbourhood of Edinburgh, ſo late as the 25th, flying about with their uſual ſpirit and vivacity, when the Thermometer ſtood at 36°.* It is neither, therefore, cold nor the want of food which diſpoſes theſe birds to quit us ſo early. They have the proceſs of moulting to undergo, which cannot be performed during torpidity. Their place of retirement, however, has not been aſcertained.

GEN. LXXXVII. CAPRIMULGUS. Bill moderately incurved, very ſmall, ſubulated, and depreſſed at the baſe; vibriſſæ at the mouth like fringes; gape very wide; ears very large; tongue acute, and intire; tail not forked; tail feathers 10; feet ſhort; the claw of the middle toe with a broad ſerrated margin.

1. Caprimulgus *europæus*. The Goat-ſucker. Black; variegated with aſh-colour; brown, ferruginous, and white; the tubes of the noſtrils indiſtinct.

Inhabits Europe, Aſia, and Africa. B.

The Goat-ſucker frequents woods, and lives on inſects, particularly beetles and phalænæ, which it takes on the wing at the dawn, and the twilight, when it ſees beſt; it lies hid during the day; it has two notes, the one a ſharp ſqueak, the other like the noiſe of a ſpinning wheel. It lays its eggs, which are two in number, on the bare ground. Its favourite attitude is ſitting on a bare bough, with the head lower than the tail.

This is the only Britiſh ſpecies; the reſt are all natives of America. They differ from Swallows, as the Owl from the Hawk, or the Phalæna from the Papilio.

* A Swift was ſeen at Lyndon, in the county of Rutland, in 1782, ſo late as the 3d of September.

White's Nat. Hiſt. of Selborne.

HIRUNDO.

with feathers. It builds in windo[illegible] houſes, and the jutting ornaments [illegible] it is "the temple-haunting Ma[illegible] ſays, that where theſe birds mo[illegible] wholeſome. It comes later th[illegible] ſtays later. It ſometimes br[illegible] ſon, and has been ſeen feed[illegible] October.

4. Hirundo *riparia*. [illegible] the throat and [illegible] *Inhabits* Euro[illegible] This ſpecies b[illegible] horizontal paſſ[illegible] but once a ye[illegible] from the re[illegible] ſaid, that [illegible] bottom [illegible]

5. Hir[illegible]

[illegible] and that the uterus of frogs opens, as in birds, into the laſt gut. Latham, the lateſt of ſyſtematic writers, has chiefly followed Linnæus; but he has made a diſtinct Order of the genus Columba; he has erected the Linnæan genera of Didus and Struthio into another Order, and he has divided the Order of Anſeres into two, viz. the birds with pinnated, and thoſe with palmated feet.

§ 173.

Birds are beſt kept in Muſeums when ſtuffed each in a glaſs-caſe. Some form the body of the bird in plaſter, and cover it with the feathers; but this is troubleſome, and cannot be accurately enough performed. When birds are kept in ſpirits, the feathers often loſe their colours. For the way of preſerving them, ſee the Gentleman's Magazine for 1772.—Lettſom's Naturaliſt's Companion, &c.

CHAP.

P. V.

AMPHIBIOLOGY.

§ 174.

LINNAEUS was the firſt who accurately characteriſed the animals of this Claſs. Before his time, ſome of them were enumerated with quadrupeds, ſome with fiſhes, and ſerpents were conſidered as forming a claſs by themſelves. But, though in external appearance they differ from one another, yet in many eſſential particulars they all agree. They have all a heart with a ſingle auricle and a ſingle ventricle, (Pl. I. fig. 2.), with cold red blood. They breathe in general by means of lungs; but they can ſuſpend reſpiration for a long time; and only one third part of the blood paſſes through the lungs. Inſtead of bones, for the moſt part, they have cartilages; their teeth are pointed and ſharp, and do not ſtand in ſockets, but are part of the ſame bone with the jaw.

§ 175.

The bodies of theſe animals are cold as their blood, and hence they are very tenacious of life; they can endure hunger for a long time; and can repair certain parts of their bodies which by accident they have loſt, ſuch as the feet, the tail, &c. In aſpect and form they

differ much from other animals; and, as many of them are venomous, they are generally beheld with horror and averſion. Their colours are often lurid and diſguſting; though ſome of them are decked in very ſplendid ſkins. They often exhale a loathſome ſmell, which is ſometimes to be aſcribed to the foulneſs of their abode, and ſometimes to the ſubſtances on which they feed. They have either an unmuſical voice or are entirely dumb.

§ 176.

Moſt of the Amphibia are oviparous; their eggs have ſoft ſhells, which, however, they do not themſelves hatch; but commit to the warmth of the air or the water, as Frogs, Lizards, and the Amphibia Nantia; or to hot ſand, as the Crocodile, the Iguana, the Turtle, &c.; or to dung, as the Serpent race. In ſome, as in the Vipers, Sharks, and ſome Lizards, the eggs are hatched in the body of the mother, and they bring forth living young.

In general the young have their perfect figure; but Frogs, and many aquatic Lizards, evolve their parts by various ſucceſſive changes, (Plate V, fig. 1.) Serpents caſt their ſkins.

§ 177.

The Amphibia feed chiefly on other animals, which by force or guile they endeavour to obtain; though ſome eat water plants, and many feed on the garbage and filth of other animals. They never chew their food, but ſwallow it whole, and digeſt it very ſlowly.

Their abode is in retired, watery, and dirty places. Moſt of them live occaſionally on land and in water; others remain always either on land or in water; but they can remain a long time, by means of the peculiar ſtructure of their body, in either element; and hence Linnæus has given them the general name of Amphibia. The moſt of theſe animals ſecrete themſelves in winter and ſleep.

§ 178.

§ 178.

The uſe of the Amphibia in the economy of nature is, to prevent the exceſſive multiplication of water animals and inſects, and to ſerve themſelves for food to many birds and fiſhes.

To man, many of them afford a grateful and ſalubrious food; they are likewiſe uſeful to him in other reſpects, and ſome of them furniſh powerful medicines. On account of theſe properties, and the injuries that may be ſuſtained from them, their hiſtory becomes important.

§ 179.

This Claſs is divided into three Orders: viz.

I. REPTILES. Theſe have four feet, and they walk as if creeping.

II. SERPENTES. Without feet; they crawl upon their belly.

III. NANTES. Theſe have fins and ſwim.

§ 180.

ORDER I. REPTILIA.

THE Amphibia Reptilia have four feet; they breathe by the mouth and noſtrils, and have true lungs. The ſkin of their body is ſometimes naked, as in Frogs; ſometimes covered with warts, as in Toads; ſometimes ſcaly, as in Lizards; or covered with a ſhell, as in the Tortoiſe.

On the head, upon the back, or on the upper ſurface of the tail, in ſome Lizards, foliaceous ſcales ſtand upright like a comb, (*criſta;*) theſe are conſidered merely as ornamental.

The tongue of theſe animals is in ſome Tortoiſes and Frogs, flat; in Lizards, as in the Chamælion, it is cylindrical,

drical, (*teres*;) in others bifid, as in the Frog, and in the Iguana, and many others entire.

The tail is wanting in Frogs; Tortoiſes have a very ſhort one; in Lizards it is often as long as the body, (*mediocris*,) or longer; ſometimes it is round, ſometimes two-edged, (*anceps*, *compreſſa*), as in the Crocodile; ſometimes flat, (*depreſſa*;) ſometimes the ſcales are in whirls, (*verticillatæ*;) or lying over one another, (*imbricatæ*;) the ſcales are ſometimes toothed, (*denticulatæ*,) as in the Lacerta *Cordylus*; but in moſt they are obtuſe.

On their feet they have ſometimes four, ſometimes five toes; and theſe are either looſe and divided, or each toe is ſurrounded with a membrane, (*pedes lobati*), as in the Gecko; or all the toes are connected by a web, and are then *pedes palmati*, like the hind feet of Frogs. The Sea Tortoiſes have fin-like feet, (*pinniformes*). Frogs and water Lizards have obtuſe fingers without nails, (*mutici*), the reſt have ſharp claws on their toes. Beſides feet, the Draco has membranous wings at the ſides, which are ſupported and moved by cartilages like ribs.

Tortoiſes, ſome Lizards, and Frogs, are eaten. The ſhell of the Tortoiſe is uſed in making curious toys. The Gecko and Salamander are poiſonous. The Crocodile is a frightful and dangerous animal.

§ 181.

The following works treat of the animals of this Order.

Olig. Jacobæi, de ranis et lacertis obſervationes. Hafn. 1686, 8vo.
Giov. Caldeſi Offervazioni intorno alla Tartaruge. Firenze 1687, 8vo.
Aug. Jo. Roeſel von Roſenhof, Hiſtoria Naturalis ranarum noſtratium. Nurnb. 1758, in fol.
Jos. Nicol. Laurenti Specimen exhibens ſynopſin reptilium emendatam. Vendob. 1767, 8vo.

Che-

Chelonographia, oder Beſchreibung einiger Schildkroten nach natürlichen Urbilden, verfertiget von D. Walbaum. Leips. 1792, 4to.
Algemeine Naturgeſchichte der Schildkroten nebſt einen ſyſtematiſches Verzeichniſſe der einzelnen arten, von J. G. Schneider. Leip. 1783.
Tracts in Natural Hiſtory by Robert Townſon, L. L. D. Lond. 1798, 8vo.
Merrem, Beytraege zur Naturgeſchichte der Amphibien, 4to. Duiſb. 1790.
Hiſtoire des Quadrupedes Ovipares par M. le Comte de la Cepede, in 2 vols. 4to. Paris 1789.
The ſame, tranſlated by Robert Kerr, in 3 vols. 8vo. Edin. 1801.

GEN. I. TESTUDO. Body furniſhed with a tail; a bony or coriaceous covering both above and below, or covered with ſcales above; the upper mandible incloſing the under one like the lid of a box.

The ſpecies of this genus are the dulleſt and moſt phlegmatic animals in nature. They are preyed upon by Sharks, ſome quadrupeds, and birds. They live on vermes, and thoſe that inhabit the ſea, likewiſe on fuci; in captivity they feed on any thing; they are exceedingly ſlow; in foul air they live longer than other animals; they are ſo tenacious of life, that they live ſeveral days after their head has been cut off, and they breathe after their breaſt has been laid open. The land ſpecies, in cold countries, hybernate during winter. The ſhell conſiſts of two plates joined together; the upper one is convex and connected with the back-bone, and may be conſidered as the ribs; it is furniſhed with 13 ſcutellæ on the diſc, and with 24 on the margin; the under one is an expanſion from the ſternum, moſt concave in the males, obtuſe before, emarginated behind, divided by ſutures into ſcutellae. The anterior aperture of the ſhell ſerves for the head and fore-feet; the poſterior for the hind-feet and tail.

The genus is divided into three ſections.

1. The marine ſpecies. With feet like fins; the fore-feet longeſt.
2. The freſh water ſpecies. With palmated feet; the ſhell connected with the ſternum by a membrane, and ſupported in the middle on both ſides by two proceſſes of the ſternum.

3. The

TESTUDO.

3. The land ſpecies. With club-ſhaped feet and nails; ſhell convex, joined to the ſternum with bony commiſſures.

* *Marine ſpecies.*

1. Teſtudo *coriacea.* Coriaceous Turtle. Shell coriaceous; ſtriated lengthwiſe.

Inhabits the Mediterranean and Atlantic.

This ſpecies has ſometimes been taken in the Britiſh ſeas. It weighs from 600 to 800 pounds, and is about 5 feet and a half long. It has no ſcutellæ, but its covering is of the conſiſtence of leather.

2. Teſtudo *imbricata.* The Hawkſbill Turtle. With two nails on the fore and hind-feet; the ſcuta are lax and imbricated.

Inhabits the American and Aſiatic oceans.

This is the ſpecies which affords the Tortoiſe ſhell. It is leſs than the common eſculent Turtle. Its fleſh is diſagreeable and unwholeſome; but its eggs are very delicate. There are 13 ſquamæ on the diſc, and 21 at the margins; the firſt are imbricated, or laid over one another like the tiles on a roof.

3. Teſtudo *Mydas.* The common Turtle. With two nails on the fore-feet, and one nail on the hind-feet; the ſhell oval.

Inhabits the iſland of Aſcenſion, and other iſlands in the ocean.

This is the ſpecies which is ſo uſeful, and ſo much coveted as food. It is the largeſt and ſtrongeſt of the genus; for it can run with a weight on its back of 600 lb. or more; and can walk with as many men above it as have room to ſtand. It ſleeps in the ſea upon its back, but when turned upon its back on land, it cannot recover itſelf. It lays a great number of eggs, about 1000 annually, which it depoſits in the ſand, and ſits upon during the night. It lays only in the wet ſeaſon; and its eggs are hatched in about 24 hours.* Its fleſh is fat and greeniſh, and moſt coveted by ſailors; it is ſaid to be antiſcorbutic. It feeds on cuttle-fiſh and ſhell-fiſh. Its ſhell was antiently uſed as a ſhield. It is about 6 or 7 feet long, and ſometimes weighs 800 pounds.

* * *Freſh*

* Woodes Rogers' Voyage, 1709.

TESTUDO.

** *Freſh water ſpecies.*

4. Teſtudo *orbicularis*. European Tortoiſe. With an orbicular ſhell; ſomewhat flat and ſmooth.

Inhabits Europe.

The diſc of this ſpecies has 13 ſcutellæ, and the margin 23; theſe ſcutellæ are quite ſmooth, of a yellow colour, with ſmall reddiſh ſpots. The ſnout ends in a ſtrong ſharp point, like a horn. It lives in rivers. Its fleſh is eaten.

*** *Land ſpecies.*

5. Teſtudo *græca*. The common Tortoiſe. The feet hardly divided into toes; the ſhell gibbous on the hind part; very obtuſe at the rim; with flattiſh ſcutellæ.

Inhabits Africa, Sardinia, &c.

Forſkahl ſays, that the fleſh of this ſpecies is a favourite food in the Grecian iſlands, the inhabitants of which, likewiſe drink its blood raw; and boil its eggs. The males, when irritated, butt like Rams, ſo that the ſtrokes can be heard a good way off. In September, this ſpecies burrows under ground, and emerges again in February or March, according to the ſeaſon. In June, it depoſits 4 or 5 eggs in a hole dug by itſelf in an airy place, which, after the firſt rains in September, produce young of the ſize of a walnut. It hardly ever goes into water; it weighs about 4 pounds.

6. Teſtudo *geometrica*. Geometrical Tortoiſe. Shell oval, the ſcutellæ raiſed; flat above, with yellow ſtriæ, radiating as from a centre.

Inhabits Dalmatia, Aſia, and South America.

This is a pretty little ſpecies, ſometimes the ſize of one's fiſt, ſometimes a foot and a half long, with black ſcutellæ and yellow rays, as if marked with geometrical figures. It lays from 12 to 15 eggs.

GEN. II. RANA. Body with four feet, naked; in general without a tail; the hind feet the longeſt.

The animals of this genus are diſtinguiſhed from thoſe of the Lacerta, by having a ſhorter body, broader head, and, except one ſpecies, by wanting the tail; they live on inſects; they do not drink, but abſorb a great deal of moiſture by their ſkin; they do not arrive at maturity till the fourth

RANA.

year, though they hardly live above twelve. The fore-feet in general have 4 unconnected toes; the hind-feet are palmated with 5, and ſometimes 6 toes; both of them without nails. They are oviparous; the young called Tadpoles, iſſue from the egg without feet, having a tail reſembling that of fiſhes, (Plate V. Fig 1.) which, as the feet grow, gradually falls away. The genus is divided into 4 ſections. 1. The Toads: the body of theſe is ſwollen and covered with warts; they have ſhort feet; they do not leap; they are nocturnal animals, and their aſpect is ugly, and in general diſagreeable; they live in dark and cloſe places; their eggs, when diſcharged, hang together like a very long ſtring of beads. 2. The Frogs: theſe are more agile; they appear more during the day, and in open places; their eggs are diſcharged in a maſs. 3. Hylæ: theſe have the hind legs very long, and the toes unconnected. 4. This ſection contains but one ſpecies, which differs from the reſt of the genus in having a tail.

1. Rana *Pipa.* The Surinam Toad. Four dents, inſtead of nails, on the toes of the fore-feet; nails on the toes of the hind feet. (Plate V. fig. 2.)

Inhabits Guiana.

This animal is remarkable for the uncommon and ſingular manner in which the female produces her young; when ſhe has depoſited her ſpawn, the male ſpreads it on her back, and preſſes the eggs into certain pits or cells, which are formed in her ſkin; he then impregnates them. Theſe eggs afterwards grow within the ſkin of the female, till in about three months the young are excluded and leave the cells, where they had paſſed their tadpole ſtate. Theſe Toads live in the waters of Guiana, and are eaten by the black inhabitants.

2. Rana *Bufo.* The common Toad. The body of a lurid appearance and duſky colour.

Inhabits Europe. B.

The Toad is fond of woody, ſhady, and obſcure ſituations; in ſummer of ſtagnant waters, in winter of ſlimy and muddy places; often digging and living under ground. It ſeeks its food in the night, and preys on inſects, which makes it uſeful in gardens, though generally perſecuted there on account of its diſguſting appearance, and a miſtaken notion of its being venomous; it eats likewiſe the Anthemis *cotula*, the Actæa, Stachys, and other fetid plants. It is very tenacious of life; and ſeveral accounts have been recorded, in different countries

RANA.

countries and at different times, of its being found incloſed in ſtones, and trunks of trees, without any viſible communication with the atmoſphere. It is preyed upon by Hawks, Owls, and Herons, and even by the Hedge-hog. It is killed by laying ſnuff upon its back. It couples in ſtagnant waters, and the conjunction laſts for ſeveral days. The female during this time produces her eggs, diſpoſed in two ſtrings, which are often 20 or 30 feet long, and which the male extracts with his hind feet.

3. Rana *Rubeta*. The Natter Jack. The anus obtuſe, dotted below.

Inhabits Europe. B.

This ſpecies frequents dry and ſandy places. It neither leaps nor crawls; its pace being more like running.

** *Frogs.*

4. Rana *temporaria*. Common Frog. The back flattiſh and ſomewhat angulated.

Inhabits Europe. B.

This is the moſt common ſpecies of Frog. In ſpring it lives in the water, where it breeds along with the Toads; in ſummer it comes upon the land. It is a harmleſs animal, feeding on ſnails, gnats, flies, and other inſects, and therefore very uſeful in gardens. It is eaten by Ducks and Herons. It is very tenacious of life, and leaps even after its heart has been cut out. In ſummer, after rain, when the young have quitted their tadpole ſtate, they come abroad in ſuch numbers that ſome have believed that it had rained Frogs.

5. Rana *eſculenta*. The eatable Frog. The body angulated; the back tranſverſely gibbous, the abdomen with a margin.

Inhabits Europe. B.

This is the largeſt European Frog. It lives in fountains, marſhes, and lakes. It is green, with 3 yellow lines, the middlemoſt from the mouth to the vent; at the corners of the mouth in the male there is a globular inflation of the ſkin when he croaks; and when he does this in the evening with more than uſual frequency, it is ſaid to preſage rain. This is a bold animal, attacking fiſhes in ponds and even pikes. It is ſo favourite a food in ſome places, that it is ſaid a ſcarcity of Frogs at Vienna would occaſion as much diſcontent as a ſcarcity of corn elſewhere.

RANA.

**** Hylæ.*

6. Rana *arborea*. The tree Frog. Body granulated below, the toes not webbed.

Inhabits Europe and America.

This is a pretty little animal, which lives on trees under the leaves; it is covered with mucus like a ſnail; it ſometimes changes colour like a Chamælion; it has ſo loud a voice, particularly before rain, and in pairing time, that it may be heard a mile off. It is ſaid to inhabit America and all Europe except Britain.

***** With a tail.*

7. Rana *paradoxa*. The Proteus Frog. The thighs obliquely ſtriated.

Inhabits South America.

This ſpecies is diſtinguiſhed from the reſt of the genus by having a tail, which is ſtrong, fleſhy, and two-edged; and the tadpole reſembles the perfect animal; before, however, it arrives at its full ſize it ſeveral times caſts its ſkin; and hence the ſtories we have heard of frogs turning into fiſhes.

GEN. III. DRACO. With four feet, a tail and wings; the wings peculiar. †

Draco *volans*. The flying Dragon. The forefeet diſtinct from the wings.

Inhabits India and Africa.

This is a ſmall, harmleſs, animal, which feeds on inſects, and lives chiefly in trees. The wings which riſe from its ſides, ſerve it, like thoſe of the flying Squirrel, to make large leaps, but not for regular flights like birds. In the general ſtructure of the body it reſembles the common Lizard.

GEN. IV. LACERTA. With four feet and a tail; the body elongated and naked; the feet of equal length.

The animals of this genus are chiefly inhabitants of the warmer regions; they are more agile than the others of this Order.

† That is, not formed of the fore feet as in birds, bats, &c. but radiated like the fins of fiſhes.

LACERTA.

Order. They live on inſects, except the Crocodiles, and except theſe and the Geckos and Geitje, they are all harmleſs: Many of them are eſculent; and many of them, particularly the aquatic ſpecies, undergo a metamorphoſis. The gape of the Crocodile is the largeſt of any known animal; both its mandibles are moveable; its body is covered with plates. The Chamælions climb by means of a prehenſile tail; they walk in a peculiar manner, they are ſlow, they ſit on the branches of trees, they have no teeth; their tongue is long and vermicular, and with it they catch flies; they have large eyes ſet in a rough cavity; their head is angulated, and they are covered with very thin and ſhining tubercles or ſquamæ. The moſt of them are oviparous, but ſome bring forth living and perfect young. The genus contains 77 ſpecies, only 5 of which are natives of Britain.

* *Tail divided into ſegments; tongue very ſhort.*

1. Lacerta *Crocodilus*. The Crocodile. The head covered with a hard coat, the neck carinated, the tail above rough with two lateral creſts.

Inhabits the Nile.

This is ſuppoſed to be the Leviathan of Job. It has a ſtrong muſky ſmell and a hoarſe voice; it is very dangerous on account of the great rapidity with which it ſwims, its ſtrength and voracity; it overpowers man, and the other larger animals both terreſtrial and aquatic; it overturns boats; its ſkin is ſo hard that, except in the belly, it is impenetrable to a muſket ball. When it runs it cannot quickly turn, by which means its prey are enabled to eſcape. It ſwallows ſtones to aſſiſt its digeſtion. The female depoſits in the ſand about 100 eggs, nearly of the ſize of thoſe of a gooſe; theſe the Viverra Ichneumon digs up and devours. The practiſed inhabitants can get upon the back of the Crocodile and manage it, they kill it when aſleep, and eat both its eggs and its fleſh. It is the largeſt animal of the Order, ſometimes attaining the length of 25 feet.

2. Lacerta *Alligator*. The Alligator. The head imbricated and flat; the neck not carinated; the tail above rough with two lateral lines.

Inhabits America.

This ſpecies is by ſome conſidered as a variety of the Crocodile; it is leſs and its manners are ſimilar; but the ſpecific difference is conſtant and remarkable.

** *Back*

LACERTA.

** *Back ciliated, dentated or creſted; head with calloſities.*

3. Lacerta *Iguana.* The Iguana. With a long and round tail; the dorſal ſuture dentated, and a denticulated ſack at the throat.

Inhabits India and South America.

This animal grows ſo tame as to follow a man like a dog. It is taken in gins on account of its fleſh, which is eſteemed delicious, though ſaid to be noxious to ſyphilitic patients.

*** *Body naked; feet without nails; the fore-feet with* 4 *toes.*

4. Lacerta *paluſtris.* The warty Lizard. Brown; tail lanceolated, and of the length of the body; the back of the male creſted in ſpring, the creſt higheſt in the middle.

Inhabits Europe. B.

This animal is frequent in ſtagnant waters, and is injurious to fiſh at ſpawning time; it may be extirpated by means of ſalt.

5. Lacerta *aquatica.* Water Lizard. Tail ſomewhat round, and as long as the body.

Inhabits Europe. B.

This ſpecies is found in freſh waters, ditches, and ponds. It is killed in three minutes by ſprinkling common ſalt upon it.

6. Lacerta *Salamandra.* The Salamander. Tail ſhort and round; the body variegated with yellow and black pores.

Inhabits the South of Europe.

The Salamander lives in mountanous places; it is a harmleſs animal; it brings forth young complete in every part, but ſtill incloſed in an egg. It was formerly believed that the Salamander could live in the fire; and this is ſo far true, that when thrown into a gentle fire, it has a faculty of diſcharging from its mouth, but chiefly from the numerous pores which are ſcattered over the whole ſurface of its body, a certain milky fluid, by which it defends itſelf a little againſt the violence of the fire.

**** *Feet with* 5 *toes; the body warty.*

7. Lacerta *Gecko.* The Gecko. Tail round, and as long as the body; the toes with nails; the ears concave.

Inhabits India, Arabia, Egypt, and Naples.

This

LACERTA.

This is a poiſonous animal, and the true Saurus and Stellio of the antients. In ſummer it is frequent in houſes, in winter ſeldom to be ſeen. It ſqueaks like a Weaſel, it is tame, and when harraſſed is ſaid to fly to man for refuge. It exudes a poiſonous juice, from between the inferior lamellæ of its feet, which adheres to bodies or to meat over which it paſſes, and produces fatal cholics in thoſe that eat of ſuch meat. With this juice it is ſaid the Japaneſe poiſon their arrows. It often ſits erect on its hind feet.

***** *Feet with 5 toes; tail round, ſhort, and incurved.*

8. Lacerta *Chamæleon.* The Chamælion. Aſh-coloured; top of the head flat. (Plate V. fig. 3.)

Inhabits India and New Spain.

This animal is remarkable for ſeveral particulars in its economy. It lives in trees, and feeds on inſects, which it takes, like the Myrmecophaga, by means of its long, filiform, viſcid tongue. Its lungs are enormouſly great, filling almoſt the whole of its body; and the animal can, at pleaſure, by inflating them, either conſiderably enlarge, or by exhauſting them diminiſh the volume of its bulk; hence, perhaps, aroſe the opinion that the Chamælion fed on air. The fine gold-coloured eyes of this animal have a peculiar property; each is moveable independent of the other; that is, while one looks forward the other can look backward. But the moſt ſingular phenomenon in its hiſtory is its change of colour, which ſome have maintained correſponded with the colour of the object beſide which it was placed; for inſtance, that in trees it was green; on ſtraw yellow, &c.; but this idea ſeems to be unfounded. A modern explanation has been ſtarted that this change of colour is owing to the gall, and is a ſpecies of jaundice, appearing particularly when the animal is irritated. It has a prehenſile tail; it is a ſlow, ugly creature; but is exceedingly gentle and innocent.

****** *With a double ring round the neck, ſquare ſcuta on the abdomen.*

9. Lacerta *agilis.* The nimble Lizard. The tail long and verticillated; 30 ſcuta on the abdomen; the colar below with a double wrinkle.

Inhabits Europe. B.

This elegant little ſpecies is about 5 or 6 inches long; it is very innocent, exceedingly quick in all its motions, it delights in open dry places, and harbours among rocks and old walls.

LACERTA.

walls. Its tail is very brittle and long, and apt to be broken off, but it is ſometimes reproduced. It is uſeful in gardens, as it feeds on flies and other inſects that injure fruits and grains.

******* *Without any ring round the neck; the body ſcaly, and marked with lines or faſciae; the tongue bifid.*

10. Lacerta *vulgaris*. Tail round and as long as the body; nails on the toes; 4 toes on the fore-feet; the back with 2 brown lines.

Inhabits Europe. B.

This ſpecies lives at firſt in water as a larva, but when its parts are fully developed, it comes upon land and lives among ſtones, old walls, &c. It is ſometimes found frozen in ice, but revives in a warmer temperature.

******** *Belly covered with imbricated ſcales; tongue not cleft.*

11. Lacerta *aurata*. The gilded Lizard. Tail round and ſomewhat longer than the body; the ſcales round and ſmooth; the ſides browniſh.

Inhabits Jerſey, Cyprus, &c. B.

The colours of this ſpecies, while alive, are as brilliant as burniſhed gold, but they fade when it dies. It feeds on putrid ſubſtances and on ſmall ſea crabs.

§ 182.

Order II. SERPENTES.

The Amphibia Serpentes move by means of the covering of their bodies, having neither feet nor fins; they breathe by means of lungs through the mouth; and they have no viſible external ear, though they have ear-bones and actually hear.

The back-bone of Serpents conſiſts of moveable articulations, and runs the whole length of the body; the breaſt and abdomen are ſurrounded with ribs, and all furniſhed with many muſcles, by means of which the winding

winding and often very quick motion of the Serpent is performed. Some can make their body ſtiff, and thereby ſpring with great velocity on their prey.

The bodies of Serpents are ſeldom naked, as in the Cecilia, but generally covered with round or oblong ſcales, which, when they are of equal breadth and cover the whole abdomen, are called *Scuta*, but, when they ſurround the whole body, they are called *Annuli*.

Their head is, for the moſt part, long, more or leſs flat, in general obtuſe, but ſometimes wedge-ſhaped, (*cuneatum*); as in the Coluber *Natrix*. It is ſometimes quite ſmooth; in moſt it is covered with ſcuta, but in the Adder with ſmall ſcales. The Coluber *Ceraſtes* is armed with a horn. †

The head is connected with the trunk without the intervention of a neck; in many ſpecies of the Coluber, however, the trunk is more ſlender towards the head, growing thicker behind. The trunk ends in the tail, which in general is pointed, ſometimes broad and rounded, as in the Coluber *laticaudatus*.

§ 183.

The jaws of Serpents are not connected with the cranium by any particular articulations, but by ſtrong muſcles and cartilaginous fulcra; they can, therefore, be opened very wide, and thus they can ſwallow an animal as groſs as themſelves. The tongue is ſlender and cleft. There are generally ſharp-pointed teeth in the jaws, by which they hold faſt their prey. In Serpents not venomous there are 3 rows of ſuch teeth in the upper jaw; one exterior and two interior: the poiſonous kinds poſſeſs the two interior rows, but all of them want the exterior.

† John Ellis on the Coluber Ceraſtes, Lin. Phil. Tranſ. vol. 56. p. 287. Gentleman's Mag. vol. 38. p. 281.

...ach, many Serpents have large
... forepart of the upper jaw. On
... of these fangs; each of which is
...ket, and, as well by the motion of
... as by particular muscles, is thrust out
... ; they are hollow. The poison is secret-
...d, which lies on each side of the jaw, and,
... motion of the jaws and the muscles, is conveyed
... fangs, and in them, when the animal bites, in-
...duced (Ibid. 6, 7.)

This poison chiefly on the nervous
system, and is commonly fatal when inserted into a
wound; it may be swallowed without dan-
ger, as it is neither acrid and corrosive, and raises an
immediate heat in the mouth: but does no injury, as in
the case of the viper, by the saliva, gall, and other
juices.

... appears to possess a poison pe-
... each poison requires its own pe-

... poisonous that are provided
... has annexed this mark ♂ to
... very large Serpents, which
..., but their bite is not dan-

... Serpents are double. The
... and the eggs hang in
... a membranous tube.

... in the spring, a new one hav-
... during the winter, which often
... from the former. It is not yet
... to grow; but it is
... as they live. Neither has
... been ascertained. They
... and in cold countries hyber-
... the whole winter.

§ 185.

§ 185.

Some Serpents were ſuppoſed to have a power of faſcinating birds. It was ſaid the Serpent fixed his eyes on a bird ſitting on a branch; on which the latter ſhewed ſymptoms of anxiety, but could not reſiſt drawing nearer and nearer to the Serpent, till at laſt it leapt into his mouth and was devoured. The fact is capable of an eaſy ſolution. The attachment of animals for their young is ſo ſtrong that, in their defence, the weakeſt creature will attack the moſt powerful. If a Serpent ſhould accidentally approach a neſt, the mother would not heſitate to endeavour to ſcare him away, and might in the attempt come within his reach. This is the whole ſecret with regard to the faſcination of Serpents.

Serpents themſelves may be charmed. This fact is better authenticated than the former. The antient Pſylli poſſeſſed the ſecret of handling ſerpents, and of even eating them alive without injury. That ſecret has been tranſmitted to poſterity, and is ſtill enjoyed by particular people in the Eaſt. Whether it is done by firſt depriving the Serpents of their poiſonous fangs, or by anointing the bodies of the Pſylli with the juices of particular herbs, or in whatever other way, has never hitherto been diſcovered.

§ 186.

The uſe of Serpents in the economy of nature ſeems to be to diminiſh the number of inſects, worms, and other ſuperfluous animals, and, to ſerve for food to others, ſuch as Storks, the Ichneumon, &c. The fleſh of ſome of the innoxious Serpents is eaten by the Indians, and the broth made from the Coluber Berus and Vipera has long been celebrated as a medicine.

§ 187.

Jo. Raii, Synopſis Quadrupedum et Serpentini generis, 8vo, Lond. 1693.

Johan. G. Schneider, Allgemeine Betrachtungen ueber die Eintheilung und Kennzeichen der Schlangen. Leipzig. Magazin. 1788.

Johan. F. Blumenbach, Beytrag zur Naturgeſchichte der Schlangen. Voigt's Magaz. 5 Band. 1. St.

An Eſſay towards a natural hiſtory of Serpents, by Charles Owen. Lond. 1742, 4to.

Jac. Theod. Klein, Tentamen Herpetologiæ. Leyd. 1755. 4to.
L'Hiſtoire naturelle des Serpens, par Monſ. de la Cepede. Par. 1789. 4to.
Kerr's Tranſlation, vol. iii. Edin. 1801, 8vo.
An Account of Indian Serpents, collected on the coaſt of Coromandel, with experiments and remarks on their ſeveral poiſons. By Patrick Ruſſel. Lond. 1796, folio.

§ 188.

The characters of the animals of this Order are taken from the covering of the body below the abdomen and tail; and the ſpecies are determined according to the number of the ſcuta and ſquamæ, under each of theſe parts reſpectively.

GEN. V. CROTALUS. Rattle Snake. With ſcuta on the belly, and ſcuta and ſquamæ under the tail; a rattle at the end of the tail.

The animals of this genus are all dangerous, their bite being poiſonous; not indeed always fatal, nor ever ſo, except when the animal is irritated. They are found only in the warmer parts of America, and give warning of their approach by the rattle in their tail, which is formed of hollow membranaceous articulations, which increaſe in number even to 40 according to the age of the Serpent. Their head is broad, covered with large ſcales; the ſnout is obtuſely rounded.

1. Crotalus *horridus*. The Rattle-Snake. With 167 ſcuta on the abdomen, and 23 ſcutellæ under the tail.

Inhabits America.

This is a moſt noxious animal; it grows to the length of 6 feet, and is as thick as a man's arm. It is devoured by hogs with impunity; and the Polygala *Senega* is a remedy for its bite, as is alſo a broad ſcarification with copious drafts of warm milk. Its bite has killed a dog in 2 minutes. The accounts of its faſcination are unfounded; (ſee § 185.) By the increaſed cultivation of America, this animal is now grown more uncommon.

2. Crotalus *Duriſſus*. The white Rattle-Snake. With 172 ſcuta on the abdomen, and 21 ſcutellæ under the tail. (Plate V. fig. 8.)

Inhabits America.

This ſpecies is found from 1½ to 4½ feet long; it often lies

CROTALUS.

lies concealed below trees, or behind fallen trunks, and thus is eaſily trodden on by uncautious feet, and enraged ſo as to bite. The American ſpecies of Solidago and Ariſtolochia are conſidered as antidotes.

GEN. VI. BOA. With ſcuta on the abdomen and under the tail, but without rattle.

The animals of this genus have the head covered like that of the Crotalus, but their tail ends in a point, and they have no poiſonous fangs. They are inhabitants of America and Aſia, particularly of the ſouthern parts.

1. Boa *Contortrix*. The Hog-noſe Snake. With 150 ſcuta on the abdomen, and 40 ſcutellæ under the tail.

Inhabits Carolina.

This animal is broad and very convex. It has the poiſonous ſacks, but wants the fangs; the tail conſtitutes half the length of the whole Serpent.

2. Boa *Conſtrictor*. The great Boa. With 240 abdominal and 60 caudal ſcuta.

Inhabits India.

This animal is worſhipped by the native Americans. It is very beautiful, and grows to be upwards of 36 feet long. It is able to overcome Stags, and even larger animals, round which it twines itſelf, and, having broken and bruiſed their bones, it ſwallows them.

GEN. VII. COLUBER. With ſcuta on the abdomen and ſquamæ under the tail.

Many of the animals of this genus are poiſonous, and are accordingly marked by Linnæus with this figure ♂. The caudal ſcales are numbered longitudinally and by pairs; thus 120 ſquamæ are reckoned 60; but in many of them the number is ſtill undetermined, and in ſome they are not equal in the ſame ſpecies.

1. Coluber *Vipera*. ♂ The Aſp. With 118 abdominal ſcuta and 20 caudal ſquamæ.

Inhabits Egypt.

This is the animal which was choſen by Cleopatra to put a period to her exiſtence. The bite of it is followed by laſſi-

tude,

COLUBER.

tude, torpor, and death, with little or no pain. Its body is clean and ſhining, the ſcales ſmooth and flat; it is ſhort, of a pale colour, with brown ſpots; the head is gibbous, with very ſmall imbricated ſcales, and the eyes placed high on the head.

2. Coluber *Ceraſtes*. The horned Snake. With 150 abdominal ſcuta, and 25 caudal ſquamæ.

Inhabits the Eaſt.

Mr. Ellis, in the Philoſophical Tranſactions, has given an account of this Serpent. The ſcales on its head are ſmall and rounded, and a ſoft tooth riſes from under each eye-lid, which gives it the appearance of being horned. It is not poiſonous.

3. Coluber *Berus*. ♂ The Viper. With 146 abdominal ſcuta, and 39 caudal ſquamæ.

Inhabits Europe and Siberia. B.

Theſe animals go by the name of Adder in Scotland. They frequent dry and ſtony places, but the chalky countries abound with them; they ſwarm in many of the Hebrides. They are viviparous; they grow to the length of two feet, and ſometimes more. They live on Frogs, Toads, Lizards, Mice, and even Moles, which they ſwallow entire. They will not eat in confinement. This is the only poiſonous Britiſh ſpecies; and Olive oil is a certain remedy if applied in time. It is eaten by many people, and Viper's broth is ſtill uſed for conſumptive patients.

4. Coluber *Preſter*. ♂ The black Viper. With 150 ſcuta, and 32 ſquamæ.

Inhabits Aſia and Europe. B.

This ſpecies is totally black, and without ſpots; it is innocent in the northern countries, but is to be dreaded in Aſia.

5. Coluber *Natrix*. The ringed Snake. With 170 ſcuta, and 60 ſquamæ.

Inhabits Europe. B.

This is the largeſt of the Britiſh ſpecies, being ſometimes more than 4 feet long. It is perfectly inoffenſive; it lodges among buſhes in moiſt places, and ſwims well. It preys on frogs, inſects, worms, and mice. It lays its eggs in dunghills, and in hot-beds. During winter it lies torpid in banks of hedges, and under old trees.

6. Coluber *Naja*. ♂ The Cobra de Capello. With 193 ſcuta, and 60 ſquamæ.

Inhabits

COLUBER.

Inhabits India and the iſland of Ternate.

This is the moſt poiſonous of Serpents, but is devoured by the Viverra *Ichneumon* with impunity. Against its bite the Ophiorhiza is an antidote. It has the power of expanding when irritated, the ſkin of the neck, which is looſe, in a remarkable degree about its head, ſomewhat in the figure of a hood, bearing a mark like a pair of ſpectacles. Dogs that are bitten by it, generally die in leſs than half an hour.

GEN. VIII. ANGUIS. Scales on the abdomen, and under the tail.

All the animals of this genus are harmleſs, being without poiſonous fangs.

1. Anguis *Eryx*. The blue-bellied ſnake. With 126 abdominal, and 136 caudal ſquamæ.

Inhabits America. B.

This ſpecies is found both in England and Scotland, in which laſt country it goes by the common name of Adder. It is aſh-coloured above, with three black lines, and bluiſh below. It is quite harmleſs.

2. Anguis *fragilis*. The blind-worm. With 135 abdominal, and 135 caudal ſquamæ.

Inhabits Europe and Siberia. B.

This too is an innocent ſpecies. Its motion is ſlow; its eyes very ſmall; in winter, when torpid, numbers of them are found twiſted together. It is very brittle; and when broken, the fragments live for ſeveral hours.

GEN. IX. AMPHISBÆNA. With rings round the body and tail.

The animals of this genus have all a fine poliſhed ſkin, and are nearly cylindrical. When touched, they are ſaid to raiſe itchy puſtules.

Amphiſbæna *fuliginoſa*. The common Amphiſbæna. With 200 rings on the body, and 30 on the tail.

Inhabits America.

This ſpecies is variegated with white, black, and brown. It is not poiſonous.

GEN. X. CECILIA. With wrinkles on the body and tail; Two tentacula at the upper lip.

Cecilia

CECILIA.

Cecilia *tentaculata*. American Cecilia. With 135 wrinkles on the body; none on the tail.

This ſpecies has hardly any tail, ſo that there can be no rugæ. It forms the link between the Serpents and Worms; it has very ſmall eyes, and is quite harmleſs.

§ 189.

Order III. NANTES.

The Amphibia Nantes make the laſt diviſion of this Claſs. They are all inhabitants of the waters; they breathe through lungs; their fins are furniſhed with cartilaginous rays; the females are partly oviparous, and partly viviparous.

Gronovius, Gouan, and Gmelin, in his edition of Linné's Syſtema Naturæ, include theſe with the Fiſhes, perhaps properly, for their lungs are more ſimilar to the gills of Fiſhes, than thoſe of the other Amphibia; beſides, in ſome of the genera, ſuch as the Raja, Squalus, and Diodon, there are found both lungs and gills. Theſe gills are like thoſe of fiſhes ciliated, but not free; they are attached to a round, arched, and tube-ſhaped ſupport, without any bony appendages; they lie behind the head, and terminate, on both ſides of the thorax, in one or more ſpiracula, which are, in general, without any branchioſtegous covering. The laſt genera, however, are poſſeſſed of real rays in the Membrana branchioſtega. They likewiſe, through theſe organs, inſpire not air alone, like the other Amphibia, but they ſeparate the air contained in the water, either by the mouth, or by means of particular organs, and diſcharge it again by the ſpiracula.

§ 190.

In the covering, and form of the body, theſe animals differ from true fiſhes. Their ſkin is ſometimes ſmooth, ſometimes rough, as in the Rays; ſometimes covered with a hard cruſt, (*corpus cataphractum*), as in the Oſtracion, Centriſcus, Pegaſus, &c. which is ſeldom the caſe with fiſhes; and they are ſeldom found with ſcales, which is frequently the caſe with fiſhes; in the Diodon, and Tetrodon, which have ſcales, theſe ſcales are commonly ſet with ſpines; ſometimes they are cartilaginous, as in the Cyclopterus; and in general they are very different from the ſcales of fiſhes.

Their body is ſometimes oblong, as in the Sharks, Baliſtes, &c. ſometimes cylindrical, as in the Petromyzon; ſpherical, or globoſe, as in the Diodon, Atringa; or compreſſed, (*cathetoplateum*), as in the Baliſtes; or flat, depreſſed, (*plagioplateum*), as in the Rays. In the Cyclopterus, Acipenſer, and Oſtracion, it is cornered, (*angulatum*); and in the Syngnathus, and Pegaſus, it is articulated.

§ 191.

The mouth of theſe animals is commonly tranſverſely oblong; in the Sturgeon, and Lamprey, it is almoſt circular; in the Rays it is ſtraight, (*lineare, rectum*); in the Sharks, often bent. It is commonly at the extremity of the head, but in Sharks, and the Sturgeon, it is on the under ſide of the head. The Syngnathus, and the Pegaſus, have no lips, and the mouth lies in a horny bill; which differs from the pointed roſtrum in the Acipenſer.

The teeth lie in the jaws, and often in ſeveral rows, as in the Rays and Sharks; they are ſometimes obtuſe, as in the Rays; or ſharp pointed, as in the Sharks; or broad like cutting teeth, as in the Diodon, &c.

The fins are attached either to the back, (*dorſales*); to both ſides of the thorax, (*pectorales*); to the abdomen, (*ventrales*); to the tail, (*anales*); or they form the tail itſelf, (*caudales*). Some of theſe are often wanting, particularly the ventral fins.

§ 192.

Many of theſe Amphibia are eatable; for inſtance the Lamprey, the young Rays, the Sturgeon, and the Syngnathus. The eggs of the Sturgeon, are what is called Caviar, (*Garum*). From the entrails, and other parts of the Sturgeon, is made iſinglaſs, *Ichthyocolla*. The rough ſkin of the Raia *fullonica*, is uſed by fullers and other artiſts; and of the ſkin of ſome ſpecies of Shark, is made Chagrin. Linnæus conſiders ſome of theſe animals as poiſonous, as the Torpedo, the Raia Paſtinaca, the Lophius, and the Tetrodon *lineatus*, and *ocellatus*; but it is well known that the two former of theſe are innocent; and the laſt are not poiſonous by their bite; but their fleſh is ſometimes dangerous, when they have been feeding on poiſonous ſubſtances.

§ 193.

Linnæus takes the generic characters of theſe animals from the form of the body, from the figure, number, and ſituation of the teeth and fins, and from the number of the ſpiracles on each ſide.

* *Branchiostegi.*

GEN. XI. MORMYRUS. Head ſmooth; many marginated teeth; the aperture of the branchiæ linear, without operculum; the branchioſtegous membrane, with one ray; the body ſcaly.

1. Mormyrus *anguilloides*. The eel-like Mormyrus; the tail bifid and obtuſe; 26 rays in the dorſal fin. *Inhabits* the Nile.

Theſe animals, in ſize and ſhape, reſemble Carps or Herrings.

GEN. XII. OSTRACION. Teeth 10 on each ſide projecting, round, and ſomewhat obtuſe; the branchial aperture linear; body covered with a hard cruſt; no ventral fins.

Of this genus there is no Britiſh ſpecies.

1. Oſtracion

OSTRACION.

1. Oſtracion *triqueter*. Three-ſided Oſtracion. Three ſided, without any ſpines.

Inhabits India.

The cruſt of this ſpecies is formed of rhombs cut as it were acroſs; the margin waved.

2. Oſtracion *quadricornis*. Four-ſpined Oſtracion. Three ſided, with two ſpines on the forehead, and two under the tail.

Inhabits Guinea and India.

This is a ſmall ſpecies common in collections. It is thick and ſhort, flat on the belly; the ſides tapering towards the back.

GEN. XIII. TETRODON. With bony maxillæ, projecting and cleft at the apex; the branchial aperture linear; body below rough, with prickles; no ventral fins.

The ſpecies of this genus are all exotic except three.

1. Tetrodon *ocellatus*. The ſpotted Tetrodon. With a faſcia on the ſhoulder marked with ocelli.

Inhabits China and Japan.

This is found in freſh waters, and in the neighbourhood of the ſea; it is thick, of a ſpherical ſhape, of a dull green above, white below, with ſhort prickles on the breaſt and abdomen. It is poiſonous; thoſe who eat it ſometimes dying in two hours. If a branch of the Illicium be boiled with the fiſh, the virulence of the poiſon is increaſed.

2. Tetrodon *Mola*. The ſhort Sun-fiſh. Without prickles, rough, compreſſed, roundiſh, tail very ſhort and rounded; joining the dorſal with the anal fin; the ſpiracles oval.

Inhabits the European ſeas. B.

This ſingular fiſh is taken on the weſtern coaſts of Britain; but it is much more common in the warmer ſeas.

3. Tetrodon *truncatus*. The oblong Sun fiſh. Without prickles, ſmooth, compreſſed, oblong, tail very ſhort, connecting the anal with the dorſal fin; the ſpiracles lunated.

Inhabits the European ſeas. B.

TETRODON.

This is made only a variety of the foregoing; it grows to a large ſize, weighing from 400 to 500 pounds; it is but a foot and a half long, thin, carinated; black on the back; ſilvery on the ſides; white below; ſkin thick, tenacious and rough.

4. Tetrodon *lævigatus*. Globe Tetrodon. The fore part of the abdomen ſet with prickles.

Inhabits Carolina. B.

This is a rare animal in our ſeas. The form of the body is oblong; but when alarmed, it has the power of inflating the belly to a globular ſhape of great ſize.

GEN. XIV. DIODON. Bony, projecting, undivided maxillæ, ending in a point; the branchial aperture linear. The body ſtudded with long, firm ſpines, variegated with black and white, covered with a common ſkin, hollow and moveable; no ventral fins.

The animals of this genus are inhabitants of the warmer ſeas, the Mediterranean and Red, the Indian, Atlantic, and Southern oceans; they feed on fiſhes, crabs, and ſhell-fiſh, but are themſelves ſcarcely eatable.

Diodon *Hyſtrix*. The round Diodon. Of a ſpherical ſhape, ſtudded with triangular prickles.

Inhabits the Indian Ocean.

This animal commonly goes by the name of the Sea Hedgehog. It is tenacious of life; its fleſh is dry, tough, and hardly eatable.

GEN. XV. SYNGNATHUS. Head ſmall; ſnout ſubcylindrical, long, bent upwards at the end; mouth terminating, without teeth or tongue, operculated, the under mandible moveable; the branchial aperture ſhut by large ſtriated opercula; the ſpiracle, a ſmall tubular opening in the neck; body articulated, and covered with hard many-ſided ſcuta; no ventral fins.

The

SYNGNATHUS.

The animals of this genus live near the ſhores of the ocean, feeding on the ſmaller aquatic inſects, vermes, and the ſpawn of fiſhes. In the ſpring, when the females are pregnant, the abdomen is turgid; the ſcuta open below near the anus, ſo as to form as it were parallel partitions on both ſides, between which, as in the Silurus *aſcita*, a great number of eggs are diſcharged, included in a thin membrane, which ſeparates from the tunic incloſing the eggs, and from theſe, after excluſion, the young Syngnathi break forth. The eyes of theſe animals are ſmall, covered on the ſides by a membrane; the noſtrils are near the eyes, and hardly perceptible; the palate ſmooth; the branchioſtegous membrane delicate, and placed at the throat; the fins are ſmall and thin, with undivided rays; no lateral line.

1. Syngnathus *Typhle*. Shorter Pipe-fiſh. The caudal, anal, and pectoral fins, radiated; the body hexangular.

Inhabits the northern European Ocean. B.

This animal is about a foot long, and as thick as a Swan's quil; it is yellow mixed with brown; it is perhaps only a variety of the following ſpecies.

2. Syngnathus *Acus*. The Longer Pipe-fiſh. The caudal, anal, and pectoral fins, radiated; the body heptangular.

Inhabits the European Ocean. B.

This ſpecies grows from 2 to 3 feet long, and is variegated with brown and blue ſpots and faſciae. It is the Acus of Ariſtotle.

3. Syngnathus *Ophidion*. The little Pipe-fiſh. With neither caudal, anal, nor pectoral fins; the body cylindrical.

Inhabits the northern European Ocean. B.

This ſpecies grows to the length of one or two feet; it is greeniſh, with 4 blue interrupted lines and rings, and its body is obtuſely angular.

4. Syngnathus *Hippocampus*. The Sea Horſe. The tail quadrangular, without a terminating fin; the body heptangular and tuberculated.

Inhabits the ſhores of the Mediterranean.

This ſpecies grows to the length of from 8 to 12 inches; it is of a brown colour, variegated above on the fore part with

SYNGNATHUS.

with white and black ſtreaks, and behind with dots; compreſſed ſideways; when alive it is ſtraight, but when dead it is curled up, ſomewhat in the ſhape of the letter S, and, its head being then inflected, gives it ſome reſemblance to a horſe. It is armed with 3 prickles, two in the anterior part of the tail and one in the hinder part.

GEN. XVI. PEGASUS. Mouth below, with a retractile proboſcis; the upper jaw elongated, denticulated, enſiform under the ſnout and linear; the branchial aperture ſimple, placed before the pectoral fins; the body compreſſed, articulated with bony inciſures, and covered with a hard cruſt; the ventral fins placed behind the pectoral fins.

1. Pegaſus *Draconis*. The little Pegaſus. With a conical ſnout.

Inhabits India.

This ſpecies is about 3 or 4 inches long; it lives on the vermes and the eggs of other fiſhes; it is bluiſh, and is rough above, with brown radiated tubercles; below it is broad, with a longitudinal eminence in the middle, in which the ventral fins are inſerted.

GEN. XVII. CENTRISCUS. The head produced into a very narrow ſnout; no teeth; the lower maxilla the longeſt; the branchial aperture waving; the body compreſſed; the abdomen carinated; the ventral fins united.

Centriſcus *ſcutatus*. The ſhielded Trumpet-fiſh. The back ſmooth with a hard ſhield.

Inhabits India.

This animal is from 6 to 8 inches long; it lives on mud and the ſmaller aquatic animals; it is thin; towards the back it is pellucid; browniſh above; at the ſides yellow mixed with ſilvery; reddiſh below, ſtreaked with white tranſverſe lines.

GEN.

GEN. XVIII. BALISTES. The head compreſſed, and as it were a continuation of the trunk; in ſome ſpecies armed with a ſpine between the eyes; mouth narrow, teeth in each jaw 8; the two foremoſt longer than the reſt; three interior teeth on both ſides reſting againſt as many lateral ones: the branchial aperture narrow, and above the pectoral fins; no opercula; the branchioſtegous membrane with two rays; the body compreſſed, carinated on the ſides, with ſcales growing to the ſkin, and rough with ſharp prickles.

The animals of this genus are not met with in the European ſeas; they can, in ſome degree, inflate their abdomen, by means of a ſtrong bone, rough with ſmall prickles, which lies under the ſkin; they feed on other fiſhes, and ſome of them are very large; ſome are remarkable for brilliant colours, but moſt of them are conſidered to be poiſonous.

1. Baliſtes *Monoceros*. The Unicorn-fiſh. A fin of one ray on the head; the rays of the caudal fin carinated.

Inhabits the Aſiatic and American Ocean.

This ſpecies is brown, variegated with aſh-colour, and grows more than a foot in length; it feeds on young crabs and polypi; its fleſh is tough, and ſuppoſed to be poiſonous. The ſpine that riſes between the eyes is moveable, and may be raiſed and depreſſed at pleaſure; it might be conſidered as a weapon of defence if it were not exceedingly brittle.

2. Baliſtes *Vetula*. The Old Wife. The firſt dorſal fin three-rayed; the ventral fin longitudinal; the caudal bifid.

Inhabits the Indian and American Oceans.

This animal is ſomewhat like a Bream; it ſwims ſlowly; lives on ſhell-fiſh; above of a browniſh yellow colour, with obſcure duſky lines; yellow at the ſides; aſh-coloured below; the ſkin divided into ſmall roundiſh compartments; when taken it utters a ſort of grunting noiſe.

GEN.

GEN. XIX. CYCLOPTERUS. Head obtuſe; mouth ſtanding forward; tongue ſhort and thick; the jaws armed with ſmall ſharp teeth; the branchioſtegous membrane with 4 rays; the operculum conſiſting of one plate; body ſhort, thick, without ſcales; the ventral fins united into an orbicular membrane.

The Cyclopteri inhabit the ſea; and live on vermes, inſects, and the young of other fiſhes; they have no lateral line.

1. Cyclopterus *Lumpus*. The Lump Fiſh. The body angulated, with bony ſcales.

Inhabits the north ſeas.

This is a thick and broad animal, ſcarcely attaining the length of two feet; it ſwims edge-ways; it is amazingly fertile; it diſcharges its orange-coloured eggs in May, and ſome have been found that contained 207,700 eggs. By the orbicular membrane on its breaſt, it adheres with great firmneſs to the bottom of the ſea, and to rocks and ſtones behind which it conceals itſelf; it moves eaſily up and down; its fleſh is ſoft and unctuous; it is white, and taſtes like ſalmon, and, if pains were taken in the dreſſing, might be made a delicacy. It is the favourite of the Greenlander, as it is of Seals. It is generally black above, aſh-coloured on the ſides, and of an orange colour below. Its ſkin is thick and rough, with ſeven rows of hard radiated ſharp-pointed tubercles, one upon the back and three on each ſide. The female is larger than the male.

2. Cyclopterus *Liparis*. The unctuous Sucker. Body without tubercles; the dorſal, anal, and caudal fins, united.

Inhabits the north Sea. B.

This ſpecies ſometimes aſcends rivers; it is from 5 to 18 inches long, elongated, thick, compreſſed, marked with a lateral line in the middle; its ſkin is thin and lax, and covered with a viſcid mucus; it varies with browniſh dots and ſtreaks; brown above, white below, yellow on the ſides and head; it lives on aquatic inſects and the ſpawn of teſtaceous animals and fiſhes; in February it depoſits ova of the ſize of peaſe; its fleſh is ſoft and oily.

3. Cyclopterus

CYCLOPTERUS.

3. Cyclopterus *cornubienſis*. Jura Sucker. Body without ſcales; two ſemilunar marks behind, and a filament before the eyes.

Inhabits the ſeas at Cornwall and the iſland of Jura. B.

This ſpecies is about four inches long; the ſkin ſlippery and of a duſky colour; the head tapers into an obtuſe ſnout.

4. Cyclopterus *bimaculatus*. Bimaculated Sucker. Body without ſcales; the pectoral fins placed very high; on each ſide of the ventral membrane a round black ſpot.

Inhabits the ſea at Weymouth. B.

This is a ſmall ſpecies, about an inch and a half long; the colour of the head and body is a fine pink.

Theſe two laſt ſpecies do not appear to be inſerted in the laſt edition of the Syſtema Naturæ; they are deſcribed by Pennant, Brit. Zool. vol. iii.

GEN. XX. LOPHIUS. Head depreſſed; many ſharp-pointed teeth; tongue broad, armed with teeth; eyes placed on the upper part of the head; noſtrils ſmall; gills 3; one lateral aperture; pectoral fins placed on the long branchiæ; the dorſal and anal fins oppoſite, near the tail; body without ſcales, covered with a thin and lax ſkin; anus in the middle; no lateral line.

Lophius *piſcatorius*. The Toad-fiſh. Depreſſed; head rounded.

Inhabits the European ſeas. B.

This animal is alſo called the Fiſhing Frog or Sea Devil, and by Pennant the Angler. It lies concealed among Fuci and behind ſand-hills, rocks and ſtones; and, by means of certain cirrhi that riſe from its head, it entices the floating vermes and fiſhes within its reach. Its ſwims with difficulty. It grows to be 7 feet long. Its head is bigger than the whole body, and its mouth is ſometimes a yard wide; the under jaw is longer than the upper. It is reſpected by the fiſhermen on account of its feeding on the voracious Dog-fiſh. It is not very prolific.

* * *Chondropterygii.*

GEN. XXI. ACIPENSER. Head obtuſe; mouth placed under the head, and retractile; without teeth; 4 cirrhi under the roſtrum and before the mouth.

The animals of this genus are among the largeſt of the tribe; they are all inhabitants of the ſea, though ſome of them at times aſcend the rivers in large troops; their fleſh is eſculent, and, of their ova is prepared the caviar; iſinglaſs is made of their ſwimming bladder and other tough parts when boiled; they are moſt uſeful animals to the fiſhermen and inhabitants, particularly of the Caſpian Sea. They live on vermes and fiſhes. The females are larger than the males.

1. Acipenſer *Sturio.* The Sturgeon. The ſnout obtuſe; the tranſverſe diameter of the mouth equal to the longitudinal; the cirrhi on the ſnout near the end of it; the lips bifid.

Inhabits the Ocean, the Mediterranean, Red, Black, and Caſpian Seas. B.

The Sturgeon grows to be eighteen feet long, and to the weight of 500 pounds; it feeds on fiſhes, particularly the Herring, Salmon, Mackrel, and Coal-fiſh. In April and May it depoſits innumerable ova; Lewenhoeck found in the roe of one of them 150,000,000,000 eggs. It enters the larger rivers, ſuch as the Rhine, the Danube, &c. in multitudes; few aſcend the ſmaller rivers. It was highly eſteemed by the Romans on account of its fleſh, which is white, firm, and delicate. It is imported into this country, pickled, from North America and the Baltic. It is a ſluggiſh, ſpiritleſs fiſh.

2. Acipenſer *Huſo.* The Beluga. The ſnout very obtuſe; the tranſverſe diameter of the mouth leſs than the longitudinal; the cirrhi near the mouth; lips not cleft.

Inhabits the Danube and the rivers of Ruſſia.

This ſpecies is the largeſt of the genus, ſometimes attaining the length of 24 feet. In figure it reſembles the Pike; it is black above, yellow below; it is ſtudded with bony tubercles, which as it grows old diſappear. Caviar is made of the roe of this ſpecies, and it affords the beſt iſinglas.

GEN.

GEN. XXII. CHIMÆRA. Head acuminated; ſpiracles ſolitary, in 4 diviſions, under the neck; mouth under the head, the upper lip with 5 diviſions; the fore-teeth like cutting-teeth, two in each jaw; body long; with a ſingle ſpine on the back; the tail ending in a briſtle, and longer than the reſt of the body.

Chimæra *monſtroſa*. The Sea Monſter. Punctured folds below the ſnout.

Inhabits the Atlantic and Northern Oceans. B.

This ſpecies has been found off the Shetland iſles. It feeds on Crabs, the Molluſca, and ſhell-fiſh. It is long, compreſſed, ſmooth and ſilvery with brown ſpots. It was firſt deſcribed by Cluſius.

GEN. XXIII. SQUALUS. Head obtuſe; from 4 to 7 ſemilunar ſpiracles on the ſides of the neck; eyes oblong, vertical, half covered, placed before the temporal opening; mouth, in the under part of the head, armed with ſeveral rows of ſerrated ſharp-pointed teeth, ſome of which are moveable, ſome fixed, and of different forms; body oblong, round, rough with ſlender prickles; the ventral fins in general leſs than the pectoral, cloſe, placed about the anus, and in the males about the genitals.

The animals of this genus inhabit the ſeas alone; they ſeldom appear in the Baltic; they ſhine in the night; they are elongated and a little compreſſed; they are viviparous; they are more prolific than the Rays, but produce their young in the ſame way, each being incloſed in a quadrangular involucrum, with long ſetæ at the corners; they attain a large ſize, ſome having been found to weigh 4000 pounds; their fleſh is tough, coarſe, of a diſagreeable ſmell, and even of the young hardly eatable; they produce a little oil, chiefly from the liver; their ſkin, which is rough, is uſed for poliſhing ivory, wood, and other things, for making thongs and other

* * CHONDROPTERYGIOUS FISHES.

GEN. XXI. ACIPENSER. Head acuminated, [illegible] ced under the head, and [illegible] 4 cirrhi under the roſtr[illegible]

The animals of this gen[illegible] tribe; they are all inhabi[illegible] them at times aſcend th[illegible] eſculent, and, of their [illegible] made of their ſwimmi[illegible] boiled; they are m[illegible] inhabitants, partic[illegible] vermes and fiſhes[illegible]

1. Acipenſer *St[illegible]* [illegible]ieſly on fiſhes; it the tranſ[illegible] [illegible]nſh, with red or black longitu[illegible] extremities; the dried ſkin is of it; [illegible] other uſes. It brings about nine- *Inh*[illegible] , and the fiſhermen believe it breeds at [illegible]car, as they never take any females but what [illegible]g.

Th[illegible] [illegible]s *Catulus*. Leſſer Dog-fiſh. The noſtrils ſur- weir[illegible] H[illegible] [illegible]ounded by a ſmall lobe and a vermiform appe- ; [illegible]dage; the ventral fins united.

Inhabits the northern ocean, the Mediterranean, &c. B.

This ſpecies grows from two to three feet in length, and approaches in colour and form ſo near to the *Canicula*, that it is, perhaps, but a variety of it. It brings from 9 to 13 young at a time; is very numerous on ſome of our coaſts, and very injurious to the fiſheries.

3. Squalus *Galeus*. The Tope. Teeth nearly triangular, denticulated on the upper margin.

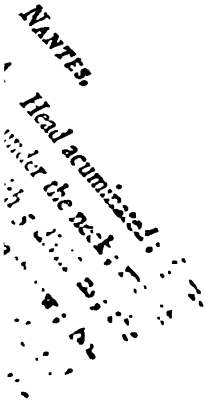
Inhabits the European ocean. B.

This is a very voracious ſpecies; it grows to be five feet long and more, and to weigh upwards of 27 pounds; it is of an aſh-colour, ſometimes lighter and ſometimes deeper; whitiſh below; it is elongated and round; its ſkin and fleſh has an offenſive rank ſmell.

4. Squalus *Muſtelus*. The ſmooth Hound. Teeth very ſmall and obtuſe.

Inhabits the European and Pacific oceans. B.

This



bout two feet long. It is called ſmooth, is ſmooth, but becauſe it wants the ſpines e of the other ſpecies have. Its ſnout nouth, and is obtuſe.

Balance fiſh. The head very omewhat in the ſhape of a

terranean, American, and

enus, and more to be
its ſkin is not ſo rough
grows to be 6 feet long, and
ings from ten to 12 young at a

The Sea Fox. The upper lobe of
as long as the body.
Inhabits the Mediterranean, &c. B.

This ſpecies is often found in the Scottiſh ſeas, and on the coaſt of Cornwall. It is 7 feet long, covered with ſmall ſcales; of a greeniſh aſh-colour above; whitiſh below; it is very voracious.

** *With an anal fin: no temporal hole.*

7. Squalus *glaucus*. The Blue Shark. The ſides of the tail ſmooth; a cavity on the back at the tail.
Inhabits the ſeas every where. B.

This ſpecies is not ſo rough as the reſt of its congeners; it grows to be 14 feet long; it is bluiſh above; white below; it is very bold.

8. Squalus *cornubicus*. The Porbeagle Shark. A longitudinal fold on each ſide of the tail.
Inhabits the ſea about Cornwall. B.

This ſpecies is round, thick, and ſhort, being only two feet and a half long; it varies, and is not very rough.

The Beaumaris Shark of Mr Pennant, is made a variety of this ſpecies.

9. Squalus *maximus*. The baſking Shark. With conical teeth, not ſerrated.
Inhabits the northern ocean. B.

This ſpecies has its English name from its practice of lying as if to ſun itſelf on the ſurface of the water. It is a migratory animal, frequenting the ſeas of theſe iſlands only in ſummer

SQUALUS.

mer. It has nothing of the fierce and voracious nature of the Shark kind; it is ſo tame, as to ſuffer itſelf to be approached and ſtroaked; it lies on the ſurface ſometimes on its back, and ſometimes on its belly. It feeds on Meduſæ, and ſea plants. It ſwims very deliberately, with the dorſal fins above water: Theſe animals are from nine to 36 feet long, and ſometimes more. The liver of ſome will weigh 1000 pounds, and yields a great quantity of pure oil fit for lamps. They are ſo ſtrong, that when harpooned, they will drag a veſſel of 70 tons after them, againſt a ſtiff gale. The ſkin makes excellent Shagreen.

10. Squalus *Carcharias*. The White Shark. Teeth triangular and ſerrated.

Inhabits the ocean. B.

This is a moſt formidable and voracious animal. It inhabits the deep at a great diſtance from land, and is marked as a Britiſh ſpecies, becauſe it ſometimes approaches our coaſts. It ſpares neither man, nor its own offspring, ſwallowing its prey entire, and often alive. As it ſometimes grows to be 30 feet long, authors have fancied that it may have been the fiſh that ſwallowed Jonah; an old fable by Lycophron ſays, that Hercules was ſwallowed by the *Canis Carcharias Tritonis*; and that having remained three nights in its belly, he was called Hercules trinoctes. This animal is infeſted by the Sucking-fiſh *(Remora)*, and by the Phyſeter *macrocephalus*. It is often eaten by ſailors on long voyages, and thought better than the reſt of the genus.

*** *No anal fin: a temporal hole.*

11. Squalus *Priſtis*. The Saw-fiſh. With a long flat ſnout, ſet with teeth on both ſides through its whole length.

Inhabits the northern and ſouthern oceans.

This ſpecies grows to be 15 feet long; it is ſmooth; blackiſh above; cinereous at the ſides; white below. The ſnout is often preſerved in Muſeums.

12. Squalus *Acanthias*. The Piked Dog-fiſh. The dorſal fins ſpiny; the body ſomewhat round.

Inhabits the ſeas every where. B.

This ſpecies is about three feet and a half long; it infeſts the Herring and the Cod; it is rough with minute prickles, hooked backwards; blackiſh above; now and then ſpotted with

SQUALUS.

with white; it is whitiſh on the ſides, verging to a violet colour, and is marked with tranſverse angulated ſulci; white below; the young are eaten by the Norwegians. In Scotland, it is ſplit and dried, and eaten by the common people.

13. Squalus *Spinax*. The leſſer piked Dog-fiſh. Blackiſh below.

Inhabits the ocean. B.

This ſpecies is ſo like the preceding in form and manners, that in all probability it is only a variety.

14. Squalus *Squatina*. The Angel fiſh. With very large pectoral fins, emarginated before.

Inhabits the northern ocean and Mediterranean. B.

This ſpecies is probably denominated the Angel-fiſh ironically, from its extreme deformity. It is 6 or 8 feet long, and grows to upwards of an hundred weight; it is gregarious; feeds chiefly on the ſmaller fiſhes; brings forth 13 young at a time; it is aſh-coloured above; rough, with ſmall prickles curved backwards, ſmooth, and white below; the mouth at the extremity; it approaches the genus Raia, by the shape of its pectoral fins, the form of its tail, and its depreſſed body.

GEN. XXIV. RAIA. Spiracles on the under part of the neck, ten on each ſide, oblique; mouth under the head, ſmall, acuminated, as if continuous with the breaſt, tranſverſe and dentated; body thin, depreſſed, and of a rhomboid figure.

The animals of this genus are all inhabitants of the ſea, and chiefly of the deep ſeas. In winter they lie in the mud or ſand; they live on crabs, ſhell-fish, and other fiſhes, and any other animals that come in their way; they are even dangerous to man himſelf; they grow to a large ſize, and the females the largeſt; often weighing 200 pounds; in their freſh ſtate, they have a fetid ſmell; they are not very fertile, and produce but one young at a time, from May to Auguſt, which is incloſed in a black bag with four corners; there are many males to one female. The eyes are oblong, and as it were half covered by a nebulous membrane; they are placed on the ſides, at the upper part of the head; above theſe, in place of noſtrils, there is a broad ſulcus ſurrounded by a reticulated membrane divided by a ſeptum, and conſiſting of creſted plicæ,

RAIA.

plicæ, the ſulcus cloſed by means of a valve; behind this, there are two ſemilunar foramina, each ending in two ducts, one cloſed by a valve, and terminating in the mouth, the other in the branchiæ, which are ſhut by an operculum. The tongue is broad, ſhort, and ſmooth; the alimentary canal is ſhort; the cavity of the abdomen round; the ovarium of the female is ſingle; the uterus has two tubes; the anus is at the origin of the tail, which is long, in general pinnated, and ſet with ſpines; the pectoral fins are thick, covered with a ſkin; they ſurround the trunk; the ventral fins unite at the baſe with the anal fins. Theſe animals are in general eſculent.

* *With ſharp-pointed teeth.*

1. Raia *Torpedo*. The Torpedo. Wholly ſmooth.

Inhabits the northern European ocean, but chiefly the Mediterranean and Perſian Gulph. B.

This famous ſpecies weighs about 20 pounds; it is white below; but varies above according to age, ſex, and climate. The margin and ridge of the back are ſet with pores filled with a mucus; it is tenacious of life; it brings forth in autumn; it is ſluggiſh; its means of defence are a ſhock truely electric, which it gives to all aſſailants, or to its prey, by which they are ſtupified or benumbed; this ſhock is weaker as the animal approaches the period of its life; or as it is young; its flesh is ſoft and ſlimy, but is eaten by the French. It is frequently taken in Torbay.

2. Raia *Batis*. The Skate. Back ſmooth in the middle; the tail with one row of ſpines.

Inhabits the European ocean. B.

This is the largeſt of the genus, arriving at the weight of 200 pounds; the young is very palatable food; and its oil is uſeful. It brings forth in March and April; it is cinereous above, ſometimes variegated with black waving ſtreaks; white below, marked with undulating lines of black dots; it is armed at the eyes with many ſmall uncinated prickles; on the ſides, with one ſtraight row of prickles; the male ſometimes with two rows of ſpines on the tail. Skate begin to come into ſeaſon in November, and grow gradually better till May, when they are in their higheſt perfection.

3. Raia *Oxyrinchus*. The ſharp-noſed Ray. In the middle of the back, ten aculeated tubercles.

Inhabits the European ocean and Mediterranean. B.

This

RAIA.

This ſpecies is about 7 feet long; it has three prickles round each eye, and is rough with many ſmall ones diſperſed over the whole ſurface; it is very thin; white below; cinereous above; with white ſpots, variegated with ſmaller dark-coloured ſpots, and black dots; upon the back, beſides the prickles, it has ſometimes two ſpines; the tail and fins are of a dark red.

4. Raia *fullonica*. The white Horſe. The back wholly covered with prickles; a ſingle row of prickles at the eyes; two rows upon the tail.

Inhabits the European ſea. B.

This ſpecies has its name from the prickles on its back, which reſemble the inſtruments Fullers make uſe of to ſmooth their cloth. It grows to a ſize equal to the Skate.

5. Raia *Rubus*. The rough Ray. One row of prickles on the back; three upon the tail.

Inhabits the European ſea. B.

Beſides the rows of prickles, this ſpecies has four large ones on the back, ſix round the eyes, and two at the noſtrils, and ſeveral ſmaller ones; at the dorſal fins, it has ſeveral rows of ſmall ones; below, it has ten large ſpines, and the reſt of the ſurface is rough with innumerable ſmall ones. It is yellowiſh above, ſpotted with brown; white below. It is found at Lochbroom in Roſs-ſhire.

* * *With obtuſe teeth.*

6. Raia *Paſtinaca*. The Sting Ray. Body ſmooth; a long ſerrated ſpine on the fore part of the tail; no dorſal fin.

Inhabits the European ſea, Red ſea, &c. B.

This ſpecies varies much. It grows to be ten pounds weight, and three feet long; the ſpine upon the tail is a formidable weapon of offence; it is ſhed and renewed annually; and believed by many fiſhermen to inſtil a poiſon when it gives a wound.

7. Raia *clavata*. The Thornback. Prickly; the teeth tuberculated; a tranſverſe cartilage on the abdomen.

Inhabits the European Sea. B.

The Thornback is very common in our ſeas; it brings forth in June and July, when it approaches the ſhores. It

RAIA.

grows to be 12 feet long; it is brownish above, with whitish ſpots; ſeldomer whitish with black ſpots; beſides the row of ſpines which run along the whole back and tail, it is rough, with larger and leſſer ones, which, when they fall, leave a white ſpot; it is white below, and has there likewiſe a few ſpines. The Norwegians extract oil from its liver. The Thornback begins to be in ſeaſon in November, and continues ſo later than the Skate; but the young of both are good at all times of the year.

GEN. XXV. PETROMYZON. Head more ſlender than the body; mouth larger above than below; teeth orange-coloured, hollow within, ſurrounded with a fleſhy rim, curved above, broad below; ſpiracles ſeven, at the ſides of the neck; a fiſtulous opening at the back part of the head; no pectoral or ventral fins.

The animals of this genus, by ſucking with their mouth, adhere firmly to the rocks and other bodies; they are ſlippery, and covered with a mucus; they have the form of a Snake or Eel; they are very tenacious of life; they live on vermes, inſects, and young fiſhes; they alſo feed on carcaſes; their belly is long and narrow; the anus is near the tail, which is pinnated; they have two dorſal fins; there are ſeveral apertures near the eyes; the tongue is hard, ſemilunar, and rough with ſerrated teeth; the alimentary canal is ſtraight; the organ of reſpiration is more like gills than lungs, conſiſting of ſeven elliptic ſaccule on each ſide, each connected with its particular ſpiracle, not cohering together, tho' mutually applied to each other by means of an oblique duct.

1. Petromyzon *marinus*. The Lamprey. The mouth within, covered with papillæ; the hinder dorſal fin ſeparate from the tail.

Inhabits the European ſea. B.

The Lamprey in ſpring aſcends the rivers for the purpoſe of depoſiting its ova. It grows to 3 feet in length, and ſometimes weighs 4 or 5 pounds. It lives on vermes and fiſh, even dead ones. It is numerous, though frequently preyed upon by the Silurus *Glanis*, by Pikes, by the Otter, &c. It grows ſlowly; it is whitiſh below; the reſt of a greeniſh colour;

PETROMYZON.

colour, bluish or yellow with greenish spots, particularly on the back. It is eaten as a great delicacy.

2. Petromyzon *fluviatilis*. Lesser Lamprey. The hinder dorsal fin angulated.

Inhabits Europe, Japan, &c. B.

This species is found in lakes, and likewise ascends the rivers in spring, for the purpose of depositing its spawn, which it does in March and April, laying it near the banks among the stones. In autumn it returns to the lakes; it is numerous; it is the frequent prey of the Silurus *Glanis*: it is from 12 to 15 inches long, variegated with waving transverse lines, blackish above, and yellowish at the sides, below whitish. This species is used by the Dutch for bait in the Cod fishery; and 450,000 have been sold to them for that purpose in a season, at 40 shillings per thousand. In Scotland, Lampreys get the name of nine-eyed Eels, from their spiracles.

3. Petromyzon *branchialis*. The Pride. The hinder dorsal fin linear; the lips behind lobated.

Inhabits the fresh waters of Europe. B.

This species keeps at the bottom of clear waters, feeding on aquatic insects: it is 6 or 7 inches long, round, attenuated at each extremity, annulated, greenish above, brownish on the sides and white below. It does not adhere to objects like other Lampreys.

§ 194.

In collections, the animals of this Class are preserved in spirits; the skins of some of them may be stuffed; and some of them may be kept dry. Those that are dried, however, lose much of their natural colours; and Serpents, even in spirits, generally lose their brilliancy.

From this Order, there is a natural transition to the animals of the next Class, the true Fishes.

CHAP. VI.

OF

ICHTHYOLOGY.

§ 195.

FISHES, which are the ſubject of Ichthyology *, are, according to the Syſtem of Linnæus, ſuch animals as have a heart with one auricle and one ventricle, (Plate I. fig. 4.) with cold red blood, which live in water and breathe by means of gills.

The gills (*branchiæ*) are ſituated on the ſides of the head, and conſiſt of certain arched rays; on the upper or convex ſide of which ſtand a multitude of filaments, connected by a fine membrane, receiving many blood veſſels, and, perhaps, air veſſels; and on the under or concave ſide are certain ſmall eminences. On each ſide there are four gills, which are attached above by means of a cartilage to the two rough or dentated bones of the palate, (*oſſicula palati*), and below are connected together likewiſe by a cartilage in the ſkin of the throat. (Plate VI. fig. 1.)

Theſe gills have covers called the *opercula branchialia*, to which is attached the membrana *branchialis* or *branchioſtega*,

* From ιχθυς a fiſh, and λογος a diſcourſe.

chioſtegâ, by which the *apertura branchialis*, that opening ſituated between the opercula and the trunk, and which is connected with the cavity of the mouth, can be opened and ſhut.

By means of theſe parts fiſhes breathe; they draw in water by the mouth, and at the ſame time ſhut the aperture of the gills with the membrane, ſo that the water may paſs through the gills, and the air contained in it may operate its effects upon the blood. Accordingly the branchioſtegous membrane with the opercula are elevated, and the fiſh again diſcharges the water through the aperture of the gills.

§ 196.

Fiſhes ſwim in the water by means of their fins, (*pinnæ.*) Theſe conſiſt of ſeveral rays (*radii*), connected by a tender film or membrane, which by particular muſcles are raiſed, expanded, and moved in various directions.

Theſe rays in many fiſhes (*Piſces malacopterygii*) are flexible and double, and are divided at the points; in others, (*Acanthopterygii*), they are ſometimes ſimple, hard, and pointed, (*radii ſpinoſi, aculei;*) but theſe laſt, beſides the ſpines, have always ſofter rays; hence their fins are called *compoſitæ*, and the fins of the former *ſimplices*. The fins receive their names from their ſituation, (§ 191), and each ſpecies differs according to the number or proportion of the rays.

Each fin has its particular uſe. With the back and anal fins the fiſh turns his body; with the pectoral fins he raiſes it up, and maintains the head in equilibrium with the reſt; with the ventral fins ſpread out he deſcends, and remains in the deep; and with the caudal fin he gives his body a progreſſive motion.

§ 197.

Beſides fins, fiſhes have a ſwimming bladder, (*veſica aërea*), which greatly aſſiſts them in ſwimming, as by it they can encreaſe or diminiſh the ſpecific gravity of their body. When they contract it, or preſs out the air contained in it by means of the abdominal muſcles, the bulk of the body is diminiſhed, its weight in proportion

to

to the water is increaſed, and the fiſh ſwims eaſily at t great depth. If the operation of the abdominal muſcles is relaxed, the ſwimming bladder again acquires its natural ſize, the body encreaſes in bulk, conſequently it grows lighter, and the fiſh ſwims eaſily at top. Thus fiſhes which have no ſwimming bladder, ſuch as Flounders, or thoſe whoſe bladder has been injured, keep always at the bottom.

This bladder lies in the abdomen, along the courſe of the back bone; it is ſometimes ſingle, ſometimes double; and of various ſtructure. The air appears to be conveyed into it from the blood by means of particular veſſels, and can be diſcharged by the trachea, by which the bladder is commonly connected with the ſtomach or mouth, but cannot be taken in in that way. Many fiſhes want this trachea.

§ 198.

The body of fiſhes is for the moſt part compreſſed; ſometimes it is flat or depreſſed, as in the Swordfiſh; or cylindrical, as in Eels. The compreſſed trunk is ſometimes two-edged, (*anceps*, *enſiforme*); in the Gymnotus, it is ſhaped like a knife, (*cultratum*); in the Scomber, it is carinated.

With reſpect to the outline, it is generally oval, often elongated, ſometimes roundiſh, (*ſuborbiculatum*), as in the Pleuronectes *lineatus*. In the Uranoſcopus it is wedge-ſhaped and conical, and has often an elevated back, (*tuberoſum*, *gibboſum*); and in the Salmo *Gaſtropelecus* of Pallas, the belly is prominent, (*ventricoſum*).

Many fiſhes have a naked ſkin, (*Piſces alepidoti*); and then their body is generally ſlippery, (*lubricum*); or ſet with ſmall ſoft tubercles, (*papilloſum*), as in the Zeus.

But, for the moſt part, the body is covered with horny ſcales; theſe are either ſmooth, (*glabræ*); or rough, (*ſcabræ*, *tuberculatæ*), as in the Scorpæna; ſometimes bony and lying over one another, ſo that the body appears as armed with a coat of mail, (*loricatum*), as in the Silurus, Trigla, and Loricaria.

The appearance and colour of the ſkin are very various;

ous; ſometimes the body is of many colours, (*variegatum*); in the Flounders, it is of one colour on the upper ſide, and of a different colour on the under, (*bicoloratum*); the colours are ſometimes in ſpots, lines, or bands, either longitudinally (*vittatum*), or tranſverſe (*faſciatum*), or like net-work (*reticulatum*). Some fiſhes are marked with diſtinct ſpots of a different colour within, (*ocelli.*)

§ 199.

Beſides the appearances which the head has in common with the body of fiſhes, the following may be remarked. It is commonly narrower than the body; ſometimes broader, as in the Zeus and Uranoſcopus, &c. The Coryphæna, Blennius, &c. have an obtuſe, the Eel a pointed, and the Gurnard an angulated head. The bones of the head are, in general, covered with the common ſkin; in the Gymnotus, that ſkin is tuberculated; in the Cottus, rough, (*ſcabrum*); in the Sparus, Mullus, &c. it is ſcaly; in the Trigla, ſpiny and loricated, (*loricatum, aculeatum.*)

On the head lies ſometimes a flat, oval, hard ſhield, (*clypeus*); by this the Remora adheres to other bodies. The Blennius, Gymnotus, &c. have a membranous creſt, (*pinnulæ, tentacula, criſtæ*). At the mouth are certain briſtly or membranous bodies, (*cirri*), which are moveable, and furniſhed with blood-veſſels and nerves. The uſe of theſe parts is not known, but they appear to be exquiſitely ſenſible. In general they are ſhorter than the head, but in ſome ſpecies of the Silurus they are longer.

§ 200.

The mouths of fiſhes are generally furniſhed with two jaws, that are often covered with a fine ſkin, but have ſometimes fleſhy and ſometimes double lips; as in the Labrus, and Perca; but the Loricaria has no jaws, its mouth is retractile.

The opening of the mouth (*rictus*) lies commonly at the extremity of the head, and is horizontal, (*tranſverſus*); ſometimes on the upper part, (*ſuperus*); ſometimes vertical, as in the Uranoſcopus; ſometimes oblique, as

in

in the Scorpæna and Pleuronectes. The ſhape likewiſe and the proportion of it is different.

Sometimes the jaws are extended into a roſtrum, which, in the Eſox *Belone*, is acute; in the Eſox *Lucius*, is flat: in the Trigla, is divided, (*bifidum*, *furcatum*, *lobatum*); in the Syngnathus, is tubular, (*fiſtuloſum*), and it differs in length and direction.

The teeth of fiſhes are, for the moſt part, in the jaws; ſometimes, too, on the tongue, as in the *Amia*; in the palate, as in the Herring; alſo, in theſe parts and in the throat, as in the Salmon and Pike; in the Flounders, they are only in the jaws and in the throat; and, in the Perch, the Cod, and Cottus, they are in the jaws, the palate, and the throat; but, in the Cyprinus, they ſtand behind the gills in an arched bone. In general they are ſharp pointed; but in ſome of the Cyprini they are obtuſe, and differ in ſhape, direction, and proportion. They are, for the moſt part, immoveable, and to be conſidered as parts of the bone; but they are ſometimes moveable, and as if merely fixed in the ſkin, as in Pikes.

The tongue of fiſhes is, for the moſt part, motionleſs, obtuſe, and fleſhy, and, being well ſupplied with nerves, is probably the chief organ of taſte; but it enables fiſhes to retain their food, and is therefore ſometimes ſet with teeth; in the Swordfiſh it is cartilaginous, and in the Herring and the Cyprini it has a degree of motion.

§ 201.

The noſtrils of fiſhes are always ſituated before the eyes, and have generally two apertures on each ſide. They differ in reſpect of figure, ſituation, and proportion; and, as the olfactory nerves are extended over them, it is not to be doubted but that fiſhes have the ſenſe of ſmelling, which beſides is made probable by many experiments.

§ 202.

The eyes of fiſhes, which are always two, lie commonly one on each ſide, nearly in the middle of the head, (*medii*); in the Uranoſcopus, on the crown of the head,

head, (*verticales*); in the Spari and Percæ, high on the ſide of the head, (*ſupremi*); in the Scorpænæ, cloſe together, (*vicini*); in the Flounders, they lie both on one ſide of the head, (*binati*), and more or leſs removed from the mouth.

In moſt fiſhes the eyes are naked. In the genus Gadus and Blennius they are covered with an internal nictitating membrane. In general they lie ſo deep in the orbits that they are protected by the bones; in the Scorpænæ, they ſtand out, (*protuberantes*). In proportion to the head they are of various bulk. (§ 78.)

§ 203.

On the trunk of the fiſh, which is joined to the head without the intervention of a neck, and proceeds diminiſhing towards the tail, there is a line on each ſide, (*linea lateralis*), which differs in reſpect of ſituation, direction, and figure. In general it conſiſts of a row of ſmall pores, under which lie ſmall glands.

§ 204.

The abdomen is either flat, (*planum*); or ridged, (*carinatum*); or ſometimes tumid, (*protuberans*), as in the Uranoſcopus, Scorpæna and Blennius. In the Herring, the ſcales forming the ridge ſtand out, and have thus the appearance of a ſaw, (*ſquamis ſerratum*); in the Salmo *rhombeus*, the abdomen is furniſhed with ſerrated prickles.

§ 205.

The *anus* in fiſhes has often a particular ſituation. In the Gymnotus, it lies under the throat, (*gularis*); in the Pleuronectes, in the breaſt, (*pectoralis*); in the Uranoſcopus and Ophidium, near the head, (*vicinus*); in the Sparus and Cyprinus, near the tail, (*remotus*); in general it lies in the middle of the abdomen, (*medius*).

§ 206.

The tail is ſaid to be ridged, (*carinata*), in the Chaetodon and Scomber; cornered (*angulata*) when the lateral line projects with a ſharp edge, as in the Scomber *Trachurus*. Sometimes it has no fin, (*apterygia*), as in the Trichiurus.

§ 207.

The bones of fiſhes, which ſupport the above mentioned parts, are formed of a ſubſtance intermediate between true bones and cartilages. The head conſiſts of a great many bones; in that of a Perch may be counted about 80; but in full-ſized fiſh they generally grow together. The back bone goes the whole length of the body, and conſiſts of vertebræ, which are ſtronger and thicker towards the head, and grow weaker and more ſlender towards the tail. Each ſpecies has a determinate number of vertebræ, which grow with the body; they are furniſhed with tranſverſe and ſpiny proceſſes, and, on the former there are tranſverſe lines, by the number of which it is thought the age of fiſhes may be known. The ribs are attached to the proceſſes of the vertebræ, and encloſe the breaſt and the abdomen. Between the pointed proceſſes of the vertebræ lie the bones which ſupport the dorſal and anal fins, (*oſſa interſpinoſa*), and which are connected with the proceſſes by a ligament. At the breaſt lie the ſternum, the clavicles, and ſcapulæ, on which the pectoral fins are placed; the bones which ſupport the ventral fins are called the Oſſa pelvis. Beſides theſe, there are often ſmall bones between the muſcles which aſſiſt their motion.

§ 208.

Fiſhes live on other aquatic animals, which they either catch alive or feed on when dead. Theſe, for the moſt part, have teeth in the jaws. Some that are provided with a roſtrum, as the Chaetodon *roſtratus*, ſuck inſects out of the air into the water to devour them. Others, as the Zeus *Faber*, Labrus *rufus*, and Uranoſcopus, very conſiderably lengthen their mouth when they open it; in particular, the Sparus *Inſidiator* can thruſt his mouth far out to catch his prey at a diſtance, perhaps above the water. Some, as the Anarrhichas *Lupus*, live on ſhell-fiſh, and have for this purpoſe very ſtrong teeth.

Other fiſh live on plants, or on the dung of animals. Nothing general, however, can as yet be determined with

with regard to the food of fiſhes, which perhaps in moſt of the ſpecies is very various.

§ 209.

To the arms of fiſhes belong the teeth, the ſpines, the ſcales, and the tubercles, which cover the head and the body. In general they eſcape from their enemy by the velocity or the variety of their motions in ſwimming.

§ 210.

Perhaps in all fiſhes there is a difference in ſex. In the males, lying along the inteſtines, there are two bodies, of a ſoft ſubſtance, called the Milt, (*lactes*); in the females are found, in the ſame place, the roe, (*ovarium*). Theſe parts communicate with the urinary bladder, by the orifice of which their contents are diſcharged. It is probable that the ova of fiſhes are fructified after excluſion.

§ 211.

Moſt fiſhes are oviparous; they commit their ova, which are in general exceedingly numerous, to the influences of the water and of the ſun; they depoſit them near the ſhore, where the ſun's heat may moſt eaſily reach them, and where the young fry may meet with aquatic animals for their food; or, thoſe which frequent the ocean attach their eggs to the ſea-weeds; further than this, it is not known that fiſhes take any care of their ova, or employ themſelves in rearing their young: the ova have no ſhell; they are generally ſpherical and ſmall in proportion to thoſe of other animals.

A few fiſhes are viviparous, ſuch as the Eel, the viviparous Blenny, and ſome others.

§ 212.

It is probable that fiſhes live to a conſiderable age; they grow quickly, and continue to encreaſe in ſize as long as they live. From the concentric circles on their ſcales, and perhaps from the tranſverſe lines on the apophyſes of their vertebrae, their age may be determined.

§ 213.

Moſt fiſhes inhabit the ſea, but go at ſpawning time to the ſhores and mouths of rivers, (*marini*); ſome of them continue always at a diſtance from the ſhore, (*pelagici*).

lagici). Many reſide in fresh waters; ſome of theſe keep in rivers, (*fluviatiles*); others in lakes, (*lacuſtres*).

Many of the moſt voracious fishes prey by night, (*nocturni*), and live retired, (*ſolitarii*), ſwimming often at the bottom; others ſeek their food by day, (*diurni*), ſwimming near the top, and go in troops, (*gregarii*); ſome of theſe, as the Herring and the Cod, make annual migrations from one ſea to another.

§ 214.

The uſe of fishes is important, as moſt of them ſerve for food to man and other animals. A few of them are ſaid to be poiſonous, as the Trachinus, Perca venenoſa, &c.

§ 215.

The principal books on the Hiſtory of Fiſhes are the following.

Plinii Hiſtoria naturalis lib. IX. de aquatilium natura.
Oppiani ἁλιευτικων, ſ. de natura piſcium.
Bellonius de aquatilibus. Paris. 1553, folio.
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§ 216.

§ 216.

Linnæus has arranged Fiſhes according to the preſence and ſituation of the ventral fins, which he conſiders as the feet of the animal, into 4 Orders.

I. APODES: containing thoſe fiſhes which want ventral fins.

II. JUGULARES: containing thoſe which have ventral fins, placed more forward than the pectoral fins, or under the throat.

III. THORACICI: containing thoſe whoſe ventral fins are placed immediately under the pectoral fins, or on the breaſt.

IV. ABDOMINALES: containing thoſe whoſe ventral fins are ſituated behind the pectoral fins, or on the abdomen.

The genera are determined by the number of rays in the branchioſtegous membrane, the condition of the teeth, the figure of the body, and of other remarkable parts.

The ſpecific characters are taken chiefly from the number of rays in the fins, which differ in the different ſpecies. But as it is ſometimes difficult to number theſe rays, and as they are likewiſe ſubject to variation, it is neceſſary to have recourſe to other marks. The form and ſituation of particular fins, the proportion of the head to the body, the condition of the lateral line, the number of the vertebræ and ribs, afford ſufficient ſubſidiary characters.

§ 217.

ORDER I. APODES.

THE animals of this Order approach very near to the Amphibia, Nantes, and ſome of them even reſemble the Ser-

Serpent tribe. They have a ſmooth ſlippery ſkin, which is in general naked, or covered in ſome ſpecies only, with ſmall ſoft and diſtant ſcales. Their body is long and ſlender; they have teeth in the jaws, and live in the ſea; but ſome are found in rivers and ſtanding waters. They feed on other animals.

GEN. I. MURÆNA. Head ſmooth; noſtrils tubular; Branchioſtegous membrane with 10 rays; eyes covered with a common integument. Body nearly cylindrical and ſlippery; the caudal fin united with the anal and dorſal fin; ſpiracles behind the head or the pectoral fins.

1. Muræna *Helena*. The Murey. No pectoral fins; the body variegated.

Inhabits the European and American Ocean.

This fiſh is remarkable for the eſtimation it was held in by the luxurious Romans. They fed it at a great expence, in particular places built for its reception, and often kept it in their chambers, as we do the Cyprinus *auratus*, the Gold-fiſh.

2. Muræna *Ophis*. The Sea Serpent. Tail pointed and round, without caudal fin.

Inhabits the European ſea. B.

This ſpecies grows to three feet and upwards in length. On the ſides it has a double row of large browniſh black ſpots. Its head is ſmall, the gape wide. The noſtrils, the branchial apertures and eyes are ſmall. The pectoral fins are ſmall, and cover the branchial aperture.

3. Muræna *Anguilla*. The Eel. The under jaw the longeſt; the body of one colour.

Inhabits the freſh waters of Europe, India, &c. B.

The Eel grows to be 6 feet long, and to weigh 20 pounds. It approaches the Serpent race in its external form, its motion, its ſlippery ſurface, and its hybernation; it ſometimes lives to 15 years of age; during the day it lies hid in the mud, making a double opening where it lies for its exit; at night it goes abroad in queſt of food, in ſearch of which it

like-

MURÆNA.

likewiſe comes upon land; it feeds on inſects, vermes, carcaſſes, ſmall fiſhes, and the ova of fiſhes; it is itſelf the favourite food of the Pike, of many birds of the Order of Grallæ, and of the Otter; it is very tenacious of life, though it cannot eaſily bear any ſmall extraordinary heat or cold. It brings forth living young about the dog-days, though eggs are often found in the bodies of the females. The fleſh is delicate, but difficult of digeſtion; the ſkin is very tough and pellucid, being uſed in windows inſtead of glaſs by the Tartars, and by others as tackle for carriages, &c.

4. Muræna *Conger*. The Conger Eel. Two tentacula at the roſtrum; the lateral line whitiſh and dotted.

Inhabits the European Ocean. B.

Congers grow to a great ſize, and ſome have been known to weigh 100 pounds. They are extremely voracious, preying on other fiſh, and on Crabs at the time they have caſt their ſhell, and are in a ſoft ſtate. They are likewiſe fond of dead carcaſſes.

5. Muræna *Siren*. The Siren. The pectoral fins like hands with four fingers; the branchioſtegous membranes have three pinnatifid bones.

Inhabits Carolina.

This is the Siren *lacertina* of the former editions of the Syſtema Naturæ, now reduced to the Genus of Muræna. It is peculiar to the muddy ſwamps of South Carolina; it preys on Serpents, which it ſeizes and holds with its ſtrong and firm teeth; it is ſometimes a foot and a half in length, its heart has but one ventricle; and its inteſtines are large and long; it has ribs and a bony tail; it is fragile, for if caſt on the ground it breaks in three or four pieces.

GEN. II. GYMNOTUS. The head with lateral opercula; two tentacula at the upper lip; eyes covered with a common integument; the branchioſtegous membrane with 5 rays; the body compreſſed, carinated with a fin underneath.

Gymnotus *electricus*. The Cramp-fiſh. Without ſcales; no dorſal fin; the caudal fin very obtuſe, and joined to the anal fin.

Inhabits Surinam, Cayenne, &c.

This

GYMNOTUS.

This remarkable fiſh is found in the freſh water rivers, particularly thoſe that are clear, and at their mouths. It was firſt diſcovered in 1677 by Dr Richer; it is endowed with a truely electric power, which is deſtroyed by the magnet; it is much dreaded by ſwimmers, as they are in danger of being drowned when ſtruck by it; for, when it gives a perſon that touches it a ſhock, he is immediately affected in the ſame manner as if he had received a ſhock of electricity from a Leyden phial, or a ſevere ſtroke on the elbow. If the fiſh is large, he is immediately rendered motionleſs, except the fiſh has itſelf been debilitated by late and frequent exertion of its power. A very painful ſenſation is communicated even when the fiſh is touched with a walking ſtick, if it has a metal head, particularly a gold one; a finger held in the water, at 15 feet diſtance, is ſenſible of a tremor, but ſealing wax interpoſed prevents the effect. Its fleſh is eſculent.

GEN. III. TRICHIURUS. Head ſtretching ſtraight out; the opercula lateral; teeth enſiform, ſemiſagittated at the point; the fore-teeth the largeſt; ſeven rays in the branchioſtegous membrane; body compreſſed and enſiform; tail ſubulated, and without fin.

Trichiurus *Lepturus*. The Gymnogaſter. The lower mandible longer than the upper.

Inhabits South America.

This is a freſh water fiſh; it is upwards of three feet long, very rapacious, and ſwims with great velocity. It leaps out of the water, and often falls into veſſels that are ſailing near. It has no ſcales, but yet appears as if wholly covered with ſilver. Inſtead of an anal fin, it has upwards of 100 minute prickles.

GEN. IV. ANARHICHAS. Head ſomewhat obtuſe. Fore-teeth 6 or more, in both jaws, conical and diverging; the grinders in the under jaw and palate rounded; branchioſtegous membrane with

ANARHICHAS.

six rays; body nearly cylindrical; caudal fin distinct.

1. Anarhichas *Lupus*. The Sea-Wolf. Of a blackish grey-colour; the sides, the anal and caudal fins and the abdomen lighter.

Inhabits the northern Ocean. B.

This fish, which in Scotland is called the Sea-Cat, grows to be fifteen feet long in the more northern parts of the ocean, which seem to be most congenial to it; but, on the British coasts, it is seldom found above seven feet. In general it prefers the deep seas, but in spring it approaches the shores; it is full of roe in February, March, and April, and in May and June deposits its ova on the sea plants. It swims but slowly, and with the serpentine motion of an Eel. It is a most voracious fish, living chiefly on crustaceous and testaceous animals, which it easily breaks by means of its very strong teeth. It is frequently killed by the Lump-fish. It is eaten by the Norwegians and Greenlanders, and in England only by the fishermen. In Scotland it is reckoned a delicacy, and eagerly bought up by the *gulosores*. It is one of the few fish that have fore-teeth and grinders, and these are so strong, that if it seize on an anchor, it will leave the marks of them on it; in a fossile state, these teeth are called *Bufonites*, or Toad-stones. The Greenlanders make a pocket of its skin.

2. Anarhichas *strigosus*. Streaked Wolf-fish. With irregular brownish transverse streaks.

Inhabits the German Ocean. B.

This is probably but a variety of the preceding species.

GEN. V. AMMODYTES. Head compressed, narrower than the body; upper lip doubled, the lower mandible narrow and acuminated; teeth like needles; branchiostegous membrane with 7 rays; body but little compressed, with very small scales; tail distinct.

Ammodytes *Tobianus*. The Sand Eel.

Inhabits the Northern Ocean.

This is the only species of the genus. It, for the most part, keeps in deep water; but, in the summer months, approaches the

AMMODYTES.

the ſhores, and buries itſelf in the ſand about half a foot deep, where it is often taken on the receſs of the tides, as it is very delicate eating. In May, it depoſits its ſpawn in the ſand near the ſhore. It is eaten by the rapacious fiſhes, ſuch as the Mackrel, &c. and by the Porpus; it feeds on the Aſcarides and Gordii. It is much uſed as a bait for other fiſh.

GEN. VI. OPHIDIUM. Head without ſcales; teeth in the maxillæ, palate, and fauces; in the branchioſtegous membrane 7 wide rays; body enſiform.

1. Ophidium *barbatum*. Bearded Ophidium. Four cirrhi, on the under jaw.

Inhabits the Mediterranean and Red Seas.

This ſpecies grows to 12 or 14 inches long; it is of a ſilvery colour, with a ſhade of pink; it is marked with irregular linear ſpots; its fleſh is good eating and white; its ſkin is covered with ſoft oblong ſcales adhering at their anterior edge.

2. Ophidium *imberbe*. Beardleſs Ophidium. No cirrhi on the maxillæ; the tail obtuſe.

Inhabits Europe. B.

This ſpecies is not common in our ſeas, but it has been taken near Weymouth. It is a long and ſmooth fiſh, ſhaped like an Eel.

GEN. VII. STROMATEUS. Head compreſſed; teeth in the maxillæ and palate; body oval, broad, and ſlippery; tail bifid.

Stromateus *Paru*. The Pampus. The back of a golden colour; the belly ſilvery.

Inhabits South America and Tranquebar.

This fiſh lives on ſmaller fiſhes and vermes; it is thin, covered with ſmall, ſlender, deciduous ſcales; its fleſh is white, tender, and delicate.

GEN. VIII. XIPHIAS. The upper mandible terminated by an enſiform roſtrum; the branchioſtegous membrane with 8 rays; the body ſomewhat cylindrical, without ſcales.

XIPHIAS.

Xiphius *Gladius*. The Swordfiſh.

Inhabits the European and Southern Oceans, the Mediterranean, &c. B.

This is the only ſpecies of the genus. It grows to the length of 20 feet, and is a very ſtrong fiſh. It feeds on Algæ and on other fiſhes, and migrates by pairs. It is much eſteemed by the Sicilians and other inhabitants of the Mediterranean for its fleſh. In May and June, it depoſits its ſpawn near the ſhore. It is taken with a ſpear and line. It ſometimes appears on our coaſts.

GEN. IX. STERNOPTYX. Head obtuſe; the mouth turning up; teeth very ſmall; no branchioſtegous membrane; body compreſſed, without ſcales; the breaſt carinated with a twofold plait; the belly tranſparent.

Sternoptyx *diaphana*. Tranſparent Sternoptyx.

Inhabits America.

This fiſh is about two inches long, compreſſed, truncated before, growing narrow behind, and of a ſilvery colour.

GEN. X. LEPTOCEPHALUS. Head narrow; body very thin and compreſſed; no pectoral fins.

Leptocephalus *Moriſii*. The Morris Launce.

Inhabits the ſea near Holyhead. B.

This is the only ſpecies of the genus. It has its trivial name from Mr William Morris, a friend of Mr Pennant, who diſcovered it. It is about 4 inches long, nearly pellucid, growing more ſlender towards the tail, which ends in a point. No caudal fin.

§ 218.

ORDER II. JUGULARES.

THE fiſhes of this Order have their ventral fins ſituated before the pectoral fins, and as it were under the throat. They are all inhabitants of the ſea, except a very few, which are found in freſh waters. Their body is ſometimes

ſometimes covered with ſcales, ſometimes not; they have, with one or two exceptions, ſpines in the dorſal and anal fins. Their gills have bony rays.

GEN. XI. CALLIONYMUS. The upper lip doubled; the eyes ſituated near each other; the branchioſtegous membrane with 6 rays; two breathing apertures in the hind part of the head; the opercula cloſe; body without ſcales; the ventral fins diſtant.

1. Callionymus *Lyra*. The gemmeous Dragonet. The firſt ray of the firſt dorſal fin as long as the body.
Inhabits the North and South Seas. B.

This ſpecies grows 12 or 14 inches long; its fleſh is white and eſculent; it is narrow and but little compreſſed. Its eyes are placed on the top of the head, as if it was meant to look only at what was above it. It is often found in the ſtomach of the Cod-fiſh. Its colours when juſt taken are very brilliant; they are a rich cerulean blue, mixed with yellow and white.

2. Callionymus *Dracunculus*. Sordid Dragonet. The rays of the firſt dorſal fin ſhorter than the body. (Plate VI. fig. 3.)
Inhabits the North and South Seas. B.

This ſpecies is of a ſilvery-colour ſpotted; the head and back brown; the fleſh white and eſculent; broad before; growing narrow behind. It is not certain, however, but that it is a mere variety of the foregoing.

GEN. XII. URANOSCOPUS. Head depreſſed, rough, and large; mouth turned up, the upper mandible the ſhorteſt; the branchioſtegous membrane papillary and dentated, with 6 rays; the opercula membranaceous and ciliated; the anus in the middle of the body.

Uranoſcopus *ſcaber*. The Star-gazer. The back without ſpiny ſcales.
Inhabits the Mediterranean.

This

URANOSCOPUS.

This fiſh ſeldom removes far from the ſhore, and lies much at the bottom. It is thick, about a foot long, brown above, aſh-coloured at the ſides, white below. Its head is large and quadrangular, and its eyes placed in the crown of the head. It feeds on the ſmall fiſhes, which it entices among the Algæ with the numerous cirrhi which hang at its under lip; it alſo feeds on aquatic inſects. It ſleeps during the day; its fleſh is white but tough.

GEN. XIII. TRACHINUS. Head ſmall, ſmooth, and compreſſed; ſix rays in the branchioſtegous membrane, the inferior plate of the opercula ſerrated; the anus near the breaſt.

Trachinus *Draco*. The Weever.

Inhabits the Northern Ocean and the Mediterranean. B.

There is but this ſpecies of the genus. It hardly grows larger than a foot in length; it is elongated, compreſſed, covered with ſmall, rounded, deciduous ſquamæ. In June it approaches the ſhores to depoſit its ſpawn. It lives on teſtaceous, cruſtaceous, and other aquatic inſects, and even on ſmall fiſhes; when young it is itſelf the frequent prey of the larger ſpecies; its fleſh is delicate. It burrows in the ſand, leaving only its noſe out, and, if trod on, immediately ſtrikes with its firſt dorſal fin, which is armed with ſpines and of a black colour, whence the wound it inflicts is attended with violent pain and inflammation.

The Great Weever of Pennant ſeems to be but a variety of the preceding ſpecies.

GEN. XIV. GADUS. Head ſmooth; ſeven round rays in the branchioſtegous membrane; body oblong, with deciduous ſcales; fins covered with a common ſkin; more dorſal and anal fins than one; the rays not prickly; the pectoral fins attenuated to a point.

* *With three dorſal fins; cirrhi at the mouth.*

1. Gadus *Aegleſinus*. The Haddock. Whitiſh; the tail bi-lobated; the upper jaw the longeſt.

Inhabits the Northern Ocean. B.

The Haddock migrates in immenſe ſhoals; it is about a foot long; in January it depoſits its ſpawn on the Fuci near the ſhore;

GADUS.

ſhore; in ſtormy weather it takes ſhelter in the ſand or among the ſea-weeds; it feeds on crabs and other marine inſects, on ſerpulæ, and even on herrings; and on theſe chiefly it fattens. It is the common prey of Seals and other ſea animals. Its fleſh is firm, white, delicate, and eaſy of digeſtion. Large Hadocks begin to be in roe the middle of November, and continue ſo till the end of January; from that time till May they are very thin-tailed, and much out of ſeaſon. In May they begin to recover, and ſome of the middling ſized fiſh are then very good, and continue improving till the time of their greateſt perfection. The ſmall ones are extremely good from May till February, and, ſome even in February, March, and April, viz. thoſe which are not old enough to breed. The large Hadocks quit the coaſt the moment they go out of ſeaſon, and leave behind great plenty of young ones. The ſhoals are generally attended by great quantities of Dog-fiſh, (Squalus *ſpinax*, &c.)

2. Gadus *Morhua*. The Cod. Tail nearly equal, the firſt ray of the anal fin armed with a ſpine.

Inhabits the European and North American Ocean. B. The Cod is a gregarious fiſh, and is found in immenſe ſhoals. It meaſures from two to three feet long; of a cinereous colour, with yellowiſh ſpots, white below; the young are ſometimes reddiſh with orange-coloured ſpots; it has larger ſcales than the reſt of this genus. It feeds on Sepiæ, Crabs, and fiſhes, nor ſparing even its own ſpecies, and throws up what it does not digeſt. It is very fertile, as it will depoſit among the rocks near the ſhore, in one year, between 9 and 10 millions of ova. It affects cold climates, and ſeems confined between the latitudes of 50 and 66°. The great rendezvous of Cod fiſh is on the banks of Newfoundland, and the other ſand-banks that lie off the coaſts of Cape Breton, Nova Scotia, and New England. But there is good fiſhing of Cod off the Hebrides and Weſtern Iſlands; and, it is obſerved, that where the greateſt ſea runs, or near the moſt dangerous rouſt, Cod are to be found both fatteſt and in greateſt numbers. In our ſeas they begin to ſpawn in January; ſome continue in roe till the beginning of April. In general they recover ſooner after ſpawning than other fiſh, and, therefore, it is common to take ſome good ones all the ſummer. When they are out of ſeaſon, they are thin-tailed and louſy, and the lice chiefly fix themſelves on the inſide of their mouths. The fiſh of a middling ſize are moſt eſteemed

GADUS.

teemed for the table, and are choſen by their plumpneſs and roundneſs, eſpecially near the tail; by the depth of the ſulcus or pit behind the head, and by the regular undulated appearance of the ſides, as if they were ribbed. The glutinous parts about the head loſe their delicate flavour after it has been 24 hours out of the water, even in winter, in which theſe and other fiſh of this genus are in higheſt ſeaſon. Some have been taken that meaſured 5 feet 8 inches, and weighed 78 pounds.

3. Gadus *luſcus*. The Bib. The firſt ray of the ventral fins ſetaceous.

Inhabits the European Ocean. B.

This ſpecies is about a foot long; of a light olive colour above, or dirty yellow,—below, ſilvery, with larger ſcales than thoſe on the Cod, and more firmly adhering. Its fleſh is delicate.

4. Gadus *barbatus*. The Whiting Pout. Seven punctures on each ſide of the under jaw.

Inhabits the northern European Ocean. B.

This ſpecies grows to be from 15 to 18 inches long. It depoſits its ſpawn on the open rocky places near the ſhore; it burrows in the ſand, and feeds on the Blenny, the Salmon, and even on young Crabs; the fleſh is white, ſoft, and eſculent, but dry. It is eaſily diſtinguiſhed from the reſt of the genus by its greater depth in proportion to its length than any of them; one, of a foot long, being 4 inches deep in the broadeſt part.

5. Gadus *minutus*. The Poor. The anus in the middle of the body.

Inhabits the European Ocean and the Mediterranean. B.

It frequents the deep ſeas, and feeds on the young and ſoft teſtaceous animals, on crabs, and marine vermes; it lays its ſpawn near the ſhore among the ſtones and fuci; it is gregarious, and preyed upon by the larger fiſhes of its own kind; it is hardly above 7 inches long; ſilvery, with black ſpots, the back of a browniſh yellow with ſmall thin ſcales. It is the ſmalleſt ſpecies of the genus yet known.

* * *With three dorſal fins; no cirrhi.*

6. Gadus *Merlangus*. The Whiting. White; the upper jaw the longeſt.

Inhabits the European Ocean. B.

The

GADUS.

The Whiting likewiſe frequents deep water, feeding on the ſmall crabs, vermes, and ſmaller fiſhes. It begins to ſpawn at the end of the year, and continues to the beginning of February; its fleſh is white, tender, and delicate, but at that time inſipid. It is ſeldom above a foot in length, long, round, and covered with ſmall, round, thin ſilvery ſcales.

7. Gadus *Carbonarius*. The Coal-fiſh. The under jaw the longeſt; the lateral line ſtraight.

Inhabits the European and Pacific Oceans. B.

In the months of January and February, this ſpecies leaves the deep ſeas, and approaches the ſhores in order to depoſit its ſpawn, which is of the ſize and colour of Millet. In the beginning of July, the young fry appear in great numbers; in the month of Auguſt they are very good eating, but after that grow coarſe.

8. Gadus *Pollachius*. The Pollack. The under jaw the longeſt; the lateral line curved.

Inhabits the European Ocean. B.

This ſpecies delights in deep and rocky places, and where the greateſt ſea runs; it migrates in immenſe ſhoals; grows at the utmoſt to a foot and a half in length; it feeds on the ſmaller fiſhes, eſpecially on the Sand-Eel; it often ſwims at the ſurface; it is of a blackiſh brown colour above, by degrees paſſing to a ſilvery colour on the abdomen, with brown dots below. It is a good eating fiſh.

* * * *With two dorſal fins.*

9. Gadus *Merlucius*. The Hake. Without cirrhi; the under jaw the longeſt.

Inhabits the Northern Ocean and the Mediterranean. B.

This is a very voracious ſpecies; it grows to be two feet long; and preys particularly on Herrings and Mackrel; it migrates in great ſhoals; it is of a long figure, covered with ſmall ſcales, of a whitiſh colour and grey above; its fleſh is flaky and eatable, though the leaſt delicate of the genus.

10. Gadus *Molva*. The Ling. With cirrhi; the upper jaw the longeſt.

Inhabits the Northern Ocean. B.

The Ling grows to the length of 7 feet; it feeds on crabs and fiſhes; in June it lays its ſpawn upon the fuci, and is at that time very numerous near the ſhores; it is the longeſt and narroweſt of the genus; brown above, whitiſh below, and yelloviſh on the ſides. On the coaſts of Scotland and

GADUS.

Ireland the Ling forms a conſiderable article of commerce; and while in ſeaſon, which it is from the beginning of February to the beginning of May, its liver abounds with a fine flavoured oil.

11. Gadus *Lota*. The Burbot. With cirrhi; the maxillæ equal.

Inhabits Europe, Siberia, India. B.

This is a freſh water ſpecies, and delights in thoſe rivers and lakes that are deep and clear; it is a cunning animal, watching below ſtones or in concealed places the fiſhes as they paſs; on theſe and on vermes and aquatic inſects it lives; it is itſelf the frequent prey of the Pike and the Silurus; it is very tenacious of life; it grows rapidly and attains the length of 3 feet; it is fertile, and depoſits its ſpawn in the fineſt ſeaſon of the year; its fleſh is white, delicate, and eaſy of digeſtion; it is covered with a mucus, and with minute, ſoft, and thin ſcales; of a browniſh-yellow colour, white below.

12. Gadus *Muſtela*. Five-bearded Cod. With five cirrhi; the firſt dorſal fin as if worn down.

Inhabits the European and Atlantic Oceans. B.

This ſpecies grows to about 19 inches long; it feeds on the teſtaceous and cruſtaceous marine animals; itſelf, when young, is the frequent prey of the larger ſpecies of its own genus and of the Mackrel; it depoſits its ſpawn in autumn; it is covered with mucus and with very thin ſcales; it is of a browniſh-yellow colour, with black ſpots, and white below.

13. Gadus *tricirratus*. The three-bearded Cod. With three cirrhi at the mouth.

Inhabits the European Ocean, &c. B.

This is conſidered by Gmelin as a mere variety of the Muſtela.

* * * * *With only one dorſal fin.*

14. Gadus *Broſme*. The Torſk. The mouth bearded; the tail oval and acute.

Inhabits the northern ſeas. B.

It is commonly ſuppoſed that the Gadus *Callarias* is what is called the Tuſk; but that ſpecies belongs to the firſt ſection, having three dorſal fins; whereas the Torſk or Tuſk, which is frequent in the ſeas about Orkney and Shetland, has but one dorſal fin. It is dried, and forms a conſiderable

article

GADUS.

article of commerce along with the Cod and Ling, which, in that ſtate, in Scotland, go all by the name of Hard-fiſh.

GEN. XV. BLENNIUS. Head ſloping, and covered with ſcales; ſix rays in the branchioſtegous membrane; body lanceolated; ventral fins with two ſpineleſs proceſſes; the anal fin detached.

* *The head creſted.*

1. Blennius *Galerita*. The creſted Blenny. The creſt tranſverſe and ſkinny.

Inhabits the European Ocean. B.

This ſpecies is about 4 or 5 inches long; it is found, though not frequently, on our rocky ſhores; its creſt it can erect or depreſs at pleaſure.

2. Blennius *Gattorugine*. The Gattorugine. With ſmall palmated fins on the eye-brows and hind part of the head.

Inhabits the Mediterranean and Atlantic. B.

This ſpecies is about 8 inches long. It lives on the young of crabs and fiſhes; it is eatable; marked with brown ſtreaks and ſpots of a lighter or darker colour, cinereous below.

3. Blennius *Phycis*. The Hake. The noſtrils ſomewhat creſted; a cirrhus on the under lip; 2 dorſal fins.

Inhabits the Mediterranean. B.

This ſpecies grows to be 18 inches long; it is found on the coaſt of Cornwall.

** *Head without creſt.*

4. Blennius *Pholis*. Smooth Blenny. The lateral line curved and ſub-bifid.

Inhabits the European ocean and the Mediterranean. B.

This ſpecies approaches the ſhores, and comes into the mouths of rivers, lurking among the ſtones and algæ; it is nimble and tenacious of life, living for near a day out of the water; it is 6 or 7 inches long; lives on the ſpawn and young of crabs and fiſhes; it is ſmooth, and covered with a viſcid mucus; it is of an olive colour, with white and dark ſpots.

5. Blennius *Gunnellus*. Spotted Blenny. The dorſal fin marked with ten black ſpots.

Inhabits the European ocean. B.

near the ſhore,
ſlippery like an
worms, and the
other fiſhes,
with ſmall ſcales;
ſome ſpots, ſome-
and darker ſpots,

Henry. Two ten-

crabs chiefly;
; it grows
variegated with
white ſcales;
: the bones ſhine

above and
the branchio-

It feeds on ſhell-
ſilvery laminæ; it

THORACICI.

fiſhes which have the
under the pectoral
any peculiar proper-
preying upon other
inhabitants of the ſea, and their
with ſcales. None of

GEN.

GEN. XVII. CEPOLA. Head roundiſh and compreſſed; mouth turning up; a ſingle row of curved teeth; ſix rays in the branchioſtegous membrane; body ſword-ſhaped, without ſcales; the abdomen ſcarcely ſo long as the head.

Cepola *Tænia*. The Tape-fiſh. The caudal fin attenuated; the head very obtuſe.

Inhabits the Mediterranean.

This fiſh frequents the ſhores that are covered with ſea-weeds; it feeds on ſhell-fiſh and crabs; it grows to the length of 4 or 5 feet; it is not eſculent; it is carinated above and below; of a ſilvery colour; the back grey with reddiſh ſpots; it is very thin, and almoſt tranſparent.

GEN. XVIII. ECHENEIS. Head oily, naked, and depreſſed; flat above and emarginated; tranſverſely ſulcated, and the ſulci ſerrated; ten rays in the branchioſtegous membrane; body without ſcales.

1. Echeneis *Remora*. The Sucking fiſh. Tail forked; the head with 18 ſtriæ.

Inhabits the ocean and the Mediterranean.

The Sucking-fish grows to one or one and a half feet long; it is not eatable; it is not even relished by Sharks. It can attach itſelf to bodies by a kind of ſuction which it produces by inflating and diminishing alternately, the interſtices of the ſulci on its head, and by this means forming a vacuum in them; hence, perhaps, came the fable that this little fiſh could arreſt the progreſs of the largeſt ship in the midſt of its courſe.

2. Echeneis *Neucrates*. The longeſt Sucking-fiſh; the tail entire; 24 ſtriæ on the head.

Inhabits the ocean every where.

This ſpecies grows to be 7 feet long; it is more ſlender than the foregoing ſpecies; of a greenish colour, but white below the lateral line; it is in other reſpects nearly allied to the Remora.

GEN. XIX. CORYPHÆNA. Head much ſloping and truncated; five rays in the branchioſtegous membrane

CORYPHÆNA.

membrane; the dorſal fin of the length of the back.

1. Coryphæna *Hippurus*. The Dolphin. The tail bifid; 60 rays in the dorſal fin.

Inhabits the Mediterranean, and the ocean in the regions approaching the Tropicks.

This fiſh muſt not be confounded with the Delphinus, or Dolphin of the antients. Its English name is that given it by the ſailors. While alive in the water, the colours of it have the brilliancy of gold; but after death they fade and vaniſh. It is very voracious, and purſues the flying fiſhes, which are its prey; it likewiſe attends on veſſels, and greedily ſnatches at whatever is thrown over-board; it is not very tenacious of life; its fleſh is for the moſt part eſculent; it is plump, compreſſed, and covered with ſmall ſcales, which adhere firmly; it is of a ſea-green colour above with orange ſpots; below ſilvery.

2. Coryphæna *Equiſelis*. The Dorado. Tail forked; 53 rays in the dorſal fin.

Inhabits the deep ſeas.

This is likewiſe a moſt beautiful fiſh, but hardly a diſtinct ſpecies from the former, it is probably but a variety; there are a great many other ſpecies of this genus, but none of them natives of the Britiſh ſeas.

GEN. XX. GOBIUS. Head ſmall, with two pores between the eyes, which are near each other, one pore placed before the other; 4 rays in the branchioſtegous membrane; body ſmall, compreſſed, covered with ſmall ſcales, and furniſhed with a pimple behind the anus; the ventral fins coaleſcing into an oval ſhape; two dorſal fins.

The fiſhes of this genus keep generally at the bottom of the ſea, lurking among the rocks, and preying on vermes, inſects, and the eggs and young of fiſhes as they leave the ſpawn: their mouth is ſmall; their mandibles are armed with ſmall ſharp teeth; the tongue is ſhort and obtuſe; in the palate are 4 bones; the branchial aperture is narrow and rounded, the lateral line in the middle.

1. Gobius

GOBIUS.

1. Gobius *niger*. The Millers Thumb. The ſecond dorſal fin with 14 rays.

Inhabits the Aſiatic and European Ocean. B.

This fiſh is cuneated; it is 5 or 6 inches long, whitiſh, variegated with browniſh, black, and yellow ſpots; in Spring it draws near the ſhore and enters the mouths of rivers; in May and June it ſpawns; its fleſh is delicate, and it is greedily preyed on by the ſpecies of the genus Gadus; by the ventral fins it fixes itſelf immoveably to the rocks, and is thence called Rock-fiſh.

2. Gobius *Aphya*. Spotted Goby. With brown faſcia extending even to the fins.

Inhabits the Nile, Mediterranean, &c. B.

This is a ſmall fiſh, hardly three inches long; it is often taken on the ſandy ſhores in the ſhrimp nets.

There are 24 other ſpecies of this genus, but they are all foreign.

GEN. XXI. COTTUS. Head broader than the body, and armed with ſpines; eyes vertical, furniſhed with a nictitating membrane; 6 branchioſtegous rays; body round, without ſcales, attenuated towards the tail; dorſal fins one or more.

1. Cottus *cataphractus*. The Pogge. Covered with a hard cruſt; roſtrum with two bifid warts; head furniſhed with cirrhi below.

Inhabits the European ſeas. B.

This ſpecies harbours among the ſandſtone rocks near the ſhore, among which, in the month of May, it depoſits its ſpawn; it lives on aquatic inſects, particularly thoſe of the genus Cancer; it ſeldom grows longer than 6 inches; it is brown, white below, and gradually attenuated towards the tail.

2. Cottus *Scorpius*. The Father Laſher. Head armed with many ſpines; the upper jaw a little longer than the under one.

Inhabits the Northern Ocean of Europe and America. B.

This ſpecies frequents the deep ſeas, but ſeeks its prey near the ſurface; in ſummer it approaches the ſhores; in December and January it depoſits its ſpawn among the fuci; it

COTTUS.

it ſwims with great velocity; it is bold and nimble; it is very voracious, and perſecutes the Blennies, Cod, Herring, Salmon, &c.; in this country it hardly exceeds 9 inches in length, but in Greenland it grows to be about 6 feet long; it is attenuated at the tail; it is covered with ſmall tubercles and ſpines, which are ſmaller in the females; it is compreſſed, browniſh above, with white ſtreaks and dots; below it is variegated with white; it is eaten by the Greenlanders.

3. Cottus *Gobio*. The Bull-head. Smooth, with two ſpines on the head.

Inhabits Europe and Siberia. B.

This is a freſh water ſpecies, which frequents rivers and brooks with a ſandy or ſtony bottom; it lies hid in holes among the rocks; it grows to 7 inches long; its ſkin is ſlippery, by means of a viſcid mucus; it is attenuated towards the tail; it is covered with ſmall round warts; it is browniſh ſpotted with black, and white below, (the male is aſh-coloured, ſpotted with brown); it ſwims ſwiftly; feeds on aquatic inſects, and the ova of fiſhes, and on the young juſt excluded; it is very voracious; it depoſits its ſpawn in March or April; it is eaten by Perches, Trouts, and Pikes; its fleſh is delicate and wholeſome, growing red when boiled.

GEN. XXII. SCORPÆNA. Head large, prickly, cirrhated, obtuſe, without ſcales, and ſub-compreſſed; eyes near each other; teeth in the maxillæ, palate, and fauces; 7 rays in the branchioſtegous membrane; body fleſhy; one dorſal fin, long, the firſt rays ſpiny.

1. Scorpæna *Porcus*. The little Sea Scorpion. With cirrhi at the eyes and noſtrils.

Inhabits the Mediterranean.

This fiſh ſeldom exceeds a foot in length; it is gregarious, and keeps near the ſhore, watching among the fuci for fiſhes, but when it fails to find theſe it will eat crabs; when touched it erects its dorſal fin, and wounds with its ſpines; its fleſh is tough and ſcarcely eatable; it is covered with ſmall and rough ſcales; it is of a brown colour, ſpotted with black on the upper part of the ſides; white on the lower part, and reddiſh below.

2. Scorpæna

SCORPÆNA.

2. Scorpæna *Scrofa*. The larger Sea Scorpion. With two cirrhi at the upper lip.

Inhabits the Atlantic and Mediterranean.

This very voracious ſpecies not only preys on fiſhes, but even on the ſmaller ſea-birds. In Italy it is eaten, as it grows to the ſize of 10 or 12 feet; it is of a reddiſh-brown colour verging a little to white, with brown ſpots, and is covered with large ſcales. Its head and eyes are large, and above the latter are three cirrhi.

There are ſeveral other ſpecies of this genus, but they are all foreign.

GEN. XXIII. ZEUS. Head compreſſed and ſloping; the upper lip arched with a tranſverſe membrane; tongue ſubulated; the branchioſtegous membrane with 7 perpendicular rays, the loweſt tranſverſe; body compreſſed, thin, and ſhining; the rays of the firſt dorſal fin ending in filaments.

1. Zeus *Faber*. The Doree. The tail rounded; a brown ocellus in the middle of the ſides; two anal fins.

Inhabits the ocean. B.

This is a fiſh of great deformity, and on that account was long rejected as food, but is now accounted a great delicacy. It is very voracious; its ſnout projects much, and its mouth is very large; it grows to be about one foot and a half long, and about 12 pounds weight; it is covered with ſmall thin ſcales; above of a blackiſh-brown colour, the ſides ſhining, and of a reſplendent greeniſh-yellow colour.

2. Zeus *Luna*. The Opah. Tail nearly in the form of a creſcent; body reddiſh with white ſpots.

Inhabits the ſea coaſts of Normandy. B.

This fiſh, though not common, has been ſeveral times taken or thrown upon the coaſts of England and Scotland. It is 3 feet long and upwards; it weighs 140 pounds; it lives long out of the water; its ſkin, which is whitiſh, is looſely covered with ſmall ſcales hardly viſible; when taken, its colour is a vivid ſcarlet varniſh over burniſhed gold, beſpangled with oval ſilver ſpots of various ſizes.

GEN. XXIV. PLEURONECTES. Head ſmall; eyes ſpherical, both on the ſame ſide of the head, and near each other; mouth arched; the jaws with teeth and unequal; from 4 to 7 rays in the branchioſtegous membrane; the cover in moſt of the ſpecies conſiſting of three laminæ; body compreſſed, carinated; the one ſide ſomewhat convex, anſwering to the back, the other, of a paler colour, to the belly; the anus nearer the head than the tail.

The fiſhes of this genus inhabit the deep ſeas, particularly the northern; and, not being furniſhed with a ſwimming bladder, they keep near the bottom; as they move they make a furrow in the ſand; they ſwim ſideways; they ſometimes lie covered in the ſand up to the head, and thus are the leſs expoſed to the voracious aquatic animals, except the young ones, which are much preyed on by the Rays and the Cod; many of them are large; they are ſingular in the whole animal kingdom for having both eyes on one ſide of the head, and the body coloured on the upper ſide and white on the under; their eyes are furniſhed with a nictitating membrane, and cloſe by their double noſtrils; their abdomen is ſhort; without ribs; the fins are ſoft, moſt of them with unbranched rays; the ventral and pectoral fins long; the caudal, for the moſt part, rounded, with bifid rays.

This genus is divided into two ſections, according to the ſituation of the eyes.

* *The eyes on the right ſide.*

1. Pleuronectes *Hippoglaſſus*. The Holibut. The whole body ſmooth.

Inhabits the European Ocean and that of North America. B.

This is the largeſt of the genus, and, perhaps, the largeſt of the true fiſhes, as ſome have been taken that weighed 400 pounds; it is very voracious, and ſpies the Rays, Cod, Lump, and other fiſhes, as they paſs, on which it feeds; in its turn it is preyed on by other rapacious aquatic animals, ſuch as Dolphins, Sharks, &c. and even by the Vultur *Albicilla*; it ſwims nearer the ſurface than the reſt of the genus; it is a lumpiſh animal, of a rancid taſte; it lays its ſpawn in ſpring near the ſhore among the rocks; it is covered with oblong

ſoft

PLEURONECTES.

ſoft ſcales, which adhere firmly; and with a viſcid mucus; of a liver colour above, white below.

2. Pleuronectes *Plateſſa*. The Plaice. Body ſmooth, with ſix tubercles on the head. (Plate VI. fig. 4.)

Inhabits the European Ocean. B.

The Plaice feeds on teſtaceous animals, and the ſmaller fiſhes; it ſometimes weighs 16 pounds; in February and March, it depoſits its ova among the ſtones and fuci near the ſhore; it is covered with ſmall ſoft ſcales, which upon the trunk are deciduous; above it is variegated with brown and aſh-colour, with orange ſpots,—white below; it is a good fiſh for the table.

3. Pleuronectes *Fleſus*. The Flounder. The lateral line rough, with ſmall ſpines at the fins.

Inhabits the European Ocean. B.

In the ſpring, this ſpecies frequents the mouths of rivers, and even enters the freſh water; it lives long after being taken; it is leſs than the Plaice, and ſeldom arrives at the weight of ſix pounds; it is eſculent; it is covered with ſmall oblong ſcales, adhering firmly to the ſkin, and deeply immerſed in it; the lateral line is ſet thick with ſmall prickles; there are ſtraight ſpines at the ventral, anal, and dorſal fins; it is of a dark brown above, with olive-coloured ſpots, varied with yellowiſh-green and black, white below, ſhaded with brown and with black ſpots.

4. Pleuronectes *Limanda*. The Dab. With ciliated ſcales; with ſmall ſpines at the origin of the dorſal and anal fins; teeth obtuſe.

Inhabits the European ſeas. B.

This ſpecies is not ſo common as the *Fleſus*; it is thinner, leſs, and more delicate than either the Plaice or the Flounder; it lives on vermes and aquatic inſects, eſpecially the leſſer crabs; it ſpawns in May and June; it is covered with oblong ſoft ſcales firmly adhering, and with a mucus; it is white below, and of a dark liver colour above; it is in ſeaſon during February, March, and April.

5. Pleuronectes *Solea*. The Sole. The body oblong and rough; the upper jaw the longeſt.

Inhabits the European Ocean and the Mediterranean. B.

The Sole is of a narrow ſhape, and two feet long and upwards, rough with ſmall hard denticulated ſcales, firmly attached to the ſkin, which is of an olive colour; it lives on

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the ſpawn and young of other fiſhes; when young itſelf, it is the prey of the larger crabs; in manners and other reſpects, it reſembles the Plaice, but is much more delicate; it grows to a much greater ſize on the weſtern than on the northern coaſts; on the former, it is ſometimes taken of the weight of 6 or 7 pounds, but the ſmall ones are much ſuperior in goodneſs to the larger; it keeps much at the bottom, and is taken in the trawl net.

6. Pleuronectes *rhomboides*. The Kitt, or Smear-Dab. Body ſmooth; the upper ſide of a light brown colour, with obſcure yellow ſpots.

Inhabits the German Ocean. B.

This ſpecies is found on the coaſt of Cornwall; its eyes ſtand out and are near each other; the mouth is narrow and full of ſmall teeth; the lateral line much incurved at its origin; the belly white, with large duſky ſpots.

* * *Eyes in the left ſide of the head.*

7. Pleuronectes *punctatus*. The Whiff. Body broad and rough.

Inhabits the North Sea. B.

This ſpecies delights in ſandy bottoms, feeding on crabs and teſtaceous animals; in Denmark it is eſteemed a great delicacy; it is of an oval ſhape, covered with ſmall, denticulated, and imbricated ſcales; it is ſpotted with red, aſh-coloured in the middle, brown on the margin, below of a reddiſh white, with black orbicular and oblong ſpots on the ſides.

8. Pleuronectes *Rhombus*. The Pearl. The body ſmooth.

Inhabits the European Sea. B.

This is the broadeſt ſpecies of the genus after the *maximus*; it was the largeſt taken in the time of Domitian; it is very voracious; the crown of the head and back brown; white below; the other parts variegated with brown and yellow; it is eſculent, and covered with ſoft, oblong ſcales.

9. Pleuronectes *maximus*. The Turbot. The body rough.

Inhabits the European Ocean and the Mediterranean. B.

The Turbot ſometimes is caught of 30 pounds weight; it is voracious, feeding on vermes, aquatic inſects, and ſhell-fiſh; its fleſh is firm and ſapid; it is of an oblong ſhape, marked above with large, unequal, obtuſe tubercles, and covered with ſmall and thin ſcales; the colour of the upper ſide.

PLEURONECTES.

fide is cinereous, marked with numbers of black ſpots of different ſizes; the belly is white; Turbots are taken with hook and line, and the beſt bait is freſh herring; but they are very delicate and nice in their taſte, for they will not touch it if the bait has been twelve hours out of the ſea.

GEN. XXV. CHAETODON. Head ſmall; mouth narrow, with retractile lips; teeth generally ſetaceous, flexible, moveable, equal, very numerous, and cloſe; eyes round, ſmall, vertical, and furniſhed with a nictitating membrane; from 3 to 6 branchioſtegous rays; body broad, thin, compreſſed, covered with hard ſcales, and coloured; the dorſal and anal fins rigid, fleſhy, ſcaly, and generally terminated with prickles.

The fiſhes of this genus are all inhabitants of the warmer climates; they are beautifully coloured; and are diſtinguiſhed by the number of ſpines in the dorſal fins.

The ſpecies of this genus enumerated in the Syſtema Naturæ amount to 63, beſides many which have not been deſcribed with ſufficient accuracy; but they are all foreign.

Chætodon *roſtratus*. The beaked Chætodon. The tail entire, with nine ſpines in the dorſal fin; an ocellated ſpot on the ſides; the beak cylindrical.

Inhabits India.

This ſpecies frequents the ſhores and the mouths of rivers; it is white, marked with longitudinal lines, and 5 brown tranſverſe faſciæ, the hinder ones edged with white; it feeds on the inſects that flutter on the ſurface of the water, on which, through its tubular roſtrum, it with the greateſt dexterity diſcharges a drop, ſo that they fall into the water and are devoured; its fleſh is white and well taſted.

GEN. XXVI. SPARUS. Strong cutting or canine teeth, with obtuſe and cloſe-ſet grinders; the lips double; five rays in the branchioſtegous membrane; the opercula ſcaly; body compreſſed; lateral line curved behind; the pectoral fins rounded.

* *Marked*

SPARUS.

* *Marked with a black ſpot.*

1. Sparus *auratus*. The Gilt Head. With a lunulated ſpot between the eyes.

Inhabits the Atlantic and Mediterranean. B.

Theſe fiſh live on teſtaceous animals, and frequent deep water on bold rocky ſhores; they are not eſteemed with us, but in antient Rome they were ſold at a very high price, particularly if they had been fed with oyſters in the Lucrine Lake; they ſleep at ſet times, a circumſtance which is not obſerved in other fiſhes.

* * *Red.*

2. Sparus *Pagrus*. The red Gilt-head. Of a reddiſh colour; the ſkin at the roots of the dorſal and anal fins gathered up and forming a ſinus.

Inhabits the ſeas on the ſouth of Europe. B.

This ſpecies grows to the weight of ten pounds, and it much reſembles the former in ſhape and figure; at the baſe of the pectoral fins is a feruginous ſpot.

* * * *Various.*

3. Sparus *dentatus*. Toothed Gilt-head. Above black, beneath ſilvery; eyes and gills very large; in the lower jaw two rows of teeth, in the upper jaw one.

Inhabits the Britiſh ſeas. B.

This ſpecies is deſcribed by Mr Ray; it was taken, being left by the tide, in the mouth of the river Tees; it was a deep fiſh formed like a roach, 26 inches long and 10 broad.

GEN. XXVII. SCARUS. Inſtead of teeth the maxillæ are eminent, crenated and bony, with a toothed margin; five rays in the branchioſtegous membrane; the operculum entire; the lateral line generally branched.

The fiſhes of this genus are all natives of the ſhores of Arabia, except one which is found in Java.

Scarus *rivulatus*. The waved Scarus. The maxillæ even, with the margin ſerrated and denticulated; the denticuli cloſe and filiform, gradually decreaſing from the middle of the lip.

Inhabits the Arabian ſhores.

This

SCARUS.

This ſpecies grows to the length of three feet; it is of a bluiſh colour with black ſpots, with yellow waving longitudinal ſtripes; it feeds on plants, particularly the Zoſtera; it is eſculent; it wounds with the ſpines of its fins, and thereby raiſes inflammation, which, however, goes off in a few hours; it is covered with ſmall ſcales.

GEN. XXVIII. LABRUS. Teeth acute; lips not doubled; ſix rays in the branchioſtegous membrane; opercula ſcaly; the rays of the dorſal fin furniſhed behind with a filiform appendage; the peſtoral fins acuminated; the lateral line ſtraight.

The fiſhes of this genus are with difficulty diſtinguiſhed from thoſe of the genera Sparus and Scarus; at certain ſeaſons of the year, ſome of them are poiſonous, perhaps from eating of the inflammatory ſpecies of Molluſca; they have ſtrong teeth, inciſors in both jaws, grinders in the upper jaw, with canine teeth on each ſide twice the length of the reſt; the lateral line is branched; the back and belly are both curved.

The genus contains 69 ſpecies, and is divided into ſections. Of the firſt, which includes thoſe ſpecies that have the tail forked, there is no Britiſh ſpecies.

* * *The tail not forked.*

The ſpecies in this ſection are diſtinguiſhed according to the number of ſpiny rays in the dorſal fin.

1. Labrus *Tinca*. The Wraſſe. The roſtrum bent upwards; the extremity of the tail circular.

Inhabits the Britiſh ſeas. B.

This ſpecies is found in deep water adjacent to the rocks. It weighs five pounds; it lives on teſtaceous and cruſtaceous animals; it is ſometimes of a dirty red colour, mixed with a certain duſkineſs, ſometimes beautifully ſtriped with red and yellow; in the dorſal fin there are fifteen ſpiny rays.

2. Labrus *bimaculatus*. Bimaculated Wraſſe. The dorſal fin with a ſkinny appendage; a brown ſpot in the middle of the ſide and another at the tail.

Inhabits the Mediterranean. B.

This ſpecies is found off the coaſt of Cornwall. The lateral line is curved; there are 15 ſpiny rays in the dorſal fin.

3. Labrus

LABRUS.

3. Labrus *trimaculatus*. Trimaculated Wraſſe. Of a red colour, with two ſpots on each ſide at the baſe of the dorſal fin, and a third between that and the tail.

Inhabits the iſland of Angleſey. B.

This ſpecies is covered with large red ſcales; it is 8 inches long, of an oblong ſhape, the tail and pectoral fins rounded; there are 17 ſpiny rays in the dorſal fin.

4. Labrus *variegatus*. The ſtriped Wraſſe. Of a red colour, with four parallel olive-coloured ſtriæ on the ſides, and as many blue ones.

Inhabits the Skerry iſles on the coaſt of Angleſea. B.

This ſpecies is 10 inches long, and of an oblong ſhape, and is perhaps but a variety of the preceding; there are 17 ſpiny rays in the dorſal fin.

5. Labrus *gibbus*. The gibbous Wraſſe. Variegated with blue and orange-colour; the tail rounded; a dark ſemilunar ſpot above the eyes.

Inhabits Angleſea. B.

This ſpecies is 8 inches long, ſhaped like a Perch, and covered with large ſcales; there are 16 ſpiny rays in the dorſal fin; the back is much arched, and very ſharp or ridged.

6. Labrus *cornubius*. The Goldfinny. With a large black ſpot near the tail; the firſt rays of the dorſal fin black; the tail unequal.

Inhabits the ſhores of Cornwall. B.

This ſpecies has never been taken above a palm in length; it much reſembles the Wraſſe; the number of ſpiny rays in the dorſal fin is not known with certainty.

7. Labrus *Comber*. The Comber. Of a vermilion colour; the tail rounded.

Inhabits the ſhores of Cornwall. B.

This ſpecies is of a ſlender form; the dorſal fin has 20 ſpiny rays.

8. Labrus *Coquus*. The Cook. Of a purple and dark blue colour, yellow below, the tail rounded.

Inhabits the ſhores of Cornwall. B.

This ſpecies is ſometimes taken in great plenty. It is a ſcaly fiſh, and does not grow to any great ſize; the ſpiny rays in the dorſal fin are uncertain.

GEN.

GEN. XXIX. SCIAENA. The whole head covered with ſcales; ſix rays in the branchioſtegous membrane; a ſulcus in the back in which the dorſal fin lies.

This genus connects the laſt with the following genus. Many of the ſpecies are ſtill obſcure. They are all foreign, and moſt of them are found on the coaſt of Arabia.

Sciæna *Umbra*. The Umbre. Variegated with black and blue; the ventral fins entire.

Inhabits the Mediterranean, Adriatic, &c.

This ſpecies is known at Rome and Venice by the name of the Umbrino, and at Marſeilles by that of the Dorado. The head, back, and tail, are browniſh-black, and ſhining like gold, with very ſmall black dots.

GEN. XXX. PERCA. The mandibles unequal, armed with ſharp-pointed and incurved teeth; the opercula conſiſt of three plates, the uppermoſt ſerrated; ſeven rays in the branchioſtegous membrane; the lateral line follows the arch of the back; the ſcales are hard and rough; the fins ſpiny; the anus nearer the tail than the head. †

* *With two diſtinct dorſal fins.*

1. Perca *fluviatilis*. The Perch. The ſecond dorſal fin with 16 rays.

Inhabits Europe and Siberia. B.

The Perch is an inhabitant of the freſh waters; it is of a beautiful

† The Linnæan characters of the genera of Sparus, Labrus, Sciæna, Perca, and Mullus, are hardly ſufficient for determining the ſpecies; there are none certain but ſuch as are taken from the teeth. For inſtance, the foremoſt opercula being dentated behind, is a character applicable to many ſpecies of Labrus, as well as to the genus of Perca. The dorſal ſpines lying in a ſulcus on the back, is not common to the genus Sciæna alone, but alſo to many of the Spari, and perhaps to ſome of the Percæ and Labri. The Ramenta at the dorſal fins belong to many of the Percæ. The Labrus and Mullus are very nearly allied. *Walbaum.*

PERCA.

beautiful greeniſh golden colour, with black tranſverſe faſciæ; it grows to about 2 feet long, ſeldom longer; it ſwims very ſwiftly at a certain depth; it is ſo tenacious of life, that it may be carried alive in wet ſtraw for 60 miles; in April and May, while rubbing itſelf on ſome ſharp body, it depoſits its ova, ſometimes to the amount of 281,000; it lives on aquatic inſects, but chiefly on the ſmaller fiſhes; it is preyed upon by Pikes, but chiefly by the Eel, and likewiſe by Ducks; it is a firm and delicate fiſh; it is gregarious, and loves deep holes and gentle ſtreams; it is very voracious, and an eager biter; if the Angler meets with a ſhoal of them, he is ſure of taking every one.

2. Perca *punctata*. The Baſſe. With 14 rays in the ſecond dorſal fin.

Inhabits the ſouth of Europe. B.

This is a ſtrong, active, and voracious fiſh; it grows to the weight of 15 pounds; it is very delicate eating, and, in antient Rome, was valued next to the Sturgeon.

* * *With one dorſal fin; the tail undivided.*

3. Perca *marina*. The Sea Perch. The dorſal fin with 15 ſpiny rays, and 14 ſoft ones; the body variegated with duſky lines.

Inhabits Norway, France, Italy, &c. B.

This ſpecies is in high eſteem for the table; the head and eyes are large; there are ſtrong ſpines on the head and opercula; the colour is red, marked with obſcure tranſverſe lines on the ſides.

4. Perca *cernua*. The Ruffe. With 27 rays in the dorſal fin, 15 of which are ſpiny.

Inhabits Europe. B.

This is a freſh water ſpecies; it is from 6 to 8 inches long, and feeds on vermes and inſects, and other younger fiſhes; it is frequently preyed on by Pikes, the larger fiſhes, and aquatic birds; in March and April it ſpawns, depoſiting at one time 75,600 ſmall ova, on a ſandy ſlope; it grows ſlowly; its fleſh is good and eaſily digeſted; it is round, covered with ſlime, yellowiſh on the ſides, verging to a greeniſh and browniſh colour, or golden; black ſpotted; breaſt white, neck and back blackiſh.

5. Perca *nigra*. The Black-fiſh. Of a narrow ſhape, covered with very minute ſcales.

Inhabits the river at Cornwall. B.

This

PERCA.

This ſpecies is ſo like the one immediately preceding, that it is probably but a variety; it is 15 inches long and three quarters of an inch broad; its tail is forked.

GEN. XXXI. GASTEROSTEUS. The head oblong and ſmooth; the mandibles armed with ſmall teeth; tongue ſhort and obtuſe; palate ſmooth; eyes moderate, hardly prominent, and lateral; ſix or ſeven rays in the branchioſtegous membrane; the operculum conſiſting of two plates, rounded, and ſtriated; body, at the tail, carinated on both ſides, and covered with ſcuta; diſtinct prickles before the dorſal fin; the back and lateral line parallel and ſtraight; the ventral fins behind the pectoral, but above the ſternum.

1. Gaſteroſteus *aculeatus*. The Banſtickle. With three ſpines on the back.

Inhabits Europe. B.

This ſpecies is a native of the freſh waters; it is about 3 inches long; it is ſhort lived, hardly attaining the age of three years; in April and May, it depoſits its ſpawn in ſmall quantity on the aquatic plants; on account of its ſpines it is ſafe from the attacks of the ſtronger inhabitants of the waters, but it is infeſted by inteſtinal vermes; it lives on the young of other fiſhes and their ſpawn, on worms and inſects and their larvæ; it is ſeldom eaten; but in ſome places taken in ſuch quantities that it is employed as dung for the ſoil; it is more uſeful as food for ducks and ſwine; the ſpines on the back can be erected or depreſſed at pleaſure.

2. Gaſteroſteus *Ductor*. The Pilot-fiſh. With 4 ſpines on the back, and 7 rays in the branchioſtegous membrane.

Inhabits the Ocean.

This ſpecies, in general, ſwims in ſhoals round Sharks, probably to prey on what theſe animals leave; it connects this genus with the Scomber, being diſtinguiſhed from the one by the branchioſtegous membrane, and from the other by the ſpines before the dorſal fin; it is called the Pilot-fiſh, becauſe it accompanies a ſhip it has once fallen in with till it

GEN. XXXIII. CENTROGASTER. Head compreſſed, ſmooth; ſeven rays, for the moſt part, in the branchioſtegous membrane; body depreſſed and ſmooth; fins ſpiny; the ventral fins united by means of a membrane, which is furniſhed with 4 acute ſpines and 6 ſoft rays.

Centrogaſter *Equula*. The ſmooth Centrogaſter. With ſpurious fins united with the dorſal fin.

Inhabits the Red Sea.

This fiſh is five inches long; it is of an oval ſhape, compreſſed, of the ſplendour of ſilver, and covered with very minute ſcales.

GEN. XXXIV. MULLUS. Head compreſſed, ſloping, covered with ſcales; eyes oblong, near each other, and vertical, with a nictitating membrane; the noſtrils ſmall and double; the mandibles and palate rough with very ſmall teeth; tongue ſhort, narrow, ſmooth, and motionleſs; three rays in the branchioſtegous membrane; the opercula conſiſt of three plates finely ſtriated; the aperture moderate; body round, elongated, red, with large ſcales, which eaſily fall off.

1. Mullus *barbatus*. Red Surmullet. With two cirrhi at the mouth; the body red.

Inhabits the Mediterranean, the Northern and Pacific oceans. B.

This ſpecies when the ſcales are off is red.

It is the Mullet of the Romans, which they bought for its weight in ſilver. Pliny, Seneca, Horace, Juvenal, and Martial, all bear witneſs to the luxury and prodigality of the rich men of their times with regard to this fiſh. Nothing, they conſidered more delightful than to view the change of its beautiful colours when expiring, and nothing more exquiſite than to feaſt on it when dreſſed with particular ſauces.

2. Mullus *Surmuletus*. The ſtriped Surmullet. With two cirrhi, and light yellow longitudinal lines.

Inhabits the European and Mediterranean ſeas. B.

This

MULLUS.

This ſpecies is from a ſpan to a foot long. It is covered with ſilvery ſcales, ſtreaked with orange; it feeds on other fiſhes, teſtaceous, and cruſtaceous animals, and even on carcaſes; it is gregarious; in ſpring it approaches the ſhores and the ſurface, and depoſits its ſpawn; it is equally delicate with the former ſpecies, of which, perhaps, it is only a variety.

GEN. XXXV. TRIGLA. Head large, loricated, with rough lines; eyes large, round, and placed near the top of the head; the gape wide; the palate and mandibles ſet with acute teeth; the noſtrils double; the branchial aperture large; the operculum conſiſting of one radiated aculeated plate; ſeven rays in the membrane; body covered with ſmall ſcales; back ſtraight with a longitudinal ſulcus, ſpiny on both ſides; the lateral line near the back, and ſtraight; the belly thick; the ventral and pectoral fins large; at each of the latter free articulated digiti.

1. Trigla *Lyra*. The Piper. With three digiti; the noſtrils tubular.

Inhabits the Britiſh ſeas. B.

This ſpecies is two feet long, and between three and four pounds weight; it is excellent eating; the covers of the gills are armed with one very ſharp and ſtrong ſpine, and there are ſeveral ſpines upon the head.

2. Trigla *Gurnardus*. They grey Gurnard. With three digiti; the back marked with black and red ſpots.

Inhabits the European ocean. B.

The Gurnard grows to be three feet long; it is covered with ſmall white ſcales, black on the edges; below it is reddiſh; it is of an elongated figure; it feeds on teſtaceous and cruſtaceous animals; it ſpawns in May and June, and is good eating.

3. Trigla *Cuculus*. The Red Gurnard. With three digiti; the lateral line not rough.

Inhabits the European ocean, Mediterranean, &c. B.

This

[illegible] not above a foot in length; it is red with [illegible] yellow [illegible] slender; very voracious; in [illegible] is flesh better than that of the preceding [illegible]

[illegible] With three digiti; [illegible] III. [illegible]

[illegible] common. B.

[illegible] it weighs from two [illegible] lives on fishes, crabs, and [illegible] as the laſt ſpecies; [illegible] long, of a pale green co- [illegible] ſpotted with rich deep blue.

[illegible] Colour red; [illegible]

[illegible] B.

[illegible] the Britiſh Triglæ, has three [illegible] diſtinguiſhed with ſtellated [illegible]

[illegible] With twenty digi- [illegible] (Plate VI. fig 5.) [illegible] &c.

[illegible] the name of Flying [illegible] wings, reaching as far [illegible] on each ſide, by reaſon of [illegible] when purſued by [illegible] raiſes itſelf out of [illegible] the length of a ſtone's throw, [illegible] into the water again. Theſe [illegible] are often brought to [illegible] even at Rome.

[illegible] another ſpecies which flies.

[illegible]

[illegible] ABDOMINALES.

[illegible] contains all thoſe true fiſhes which have [illegible] fins ſituated behind the pectoral fins, or upon [illegible]; they are for the moſt part inhabitants of [illegible] waters; and none of them are viviparous.

GEN.

GEN. XXXVI. COBITIS. Head ſmall, oblong, and void of ſcales; eyes in the upper part of the head; the neck flat; from 6 to four rays in the branchioſtegous membrane; the opercula formed of a ſingle plate, ſhutting cloſe below; body covered with mucus and ſmall deciduous ſcales, and variegated with faſciæ and ſpots; almoſt equal, that is, the tail towards the caudal fin not much narrowed; back ſtraight, with a ſingle fin; the lateral line ſcarcely viſible; the anus near the tail, which is rounded.

1. Cobitis *Barbatula*. The Loche. With ſix cirrhi; head without ſpines, and compreſſed.

Inhabits Europe and Aſia. B.

This is a freſh water ſpecies, delighting in the ſmaller clear ſtreams of mountanous countries; it is from three to four inches in length; very prolific; feeding on vermes and inſects; ſpawning in March and April; not very tenacious of life, and is the food of many other fiſhes; its fleſh is excellent.

2. Cobitis *Tænia*. The armed Loche. With 6 cirrhi; a ſpine below the eyes.

Inhabits Europe. B.

This ſpecies is alſo a freſh water fiſh, and is found in the Trent; it harbours below the ſtones, and is tenacious of life; when handled, it utters a ſort of hiſs; it feeds on vermes and aquatic inſects, on the ova and young of other fiſhes; it ſpawns in April and May, and is the prey of the Pike, the Perch, and the aquatic birds; it is ſeldom eaten by man; it is about five inches long.

GEN. XXXVII. AMIA. The head bony, naked, rough, with ſutures; teeth acute, and cloſe in the jaws and the palate; two cirrhi at the noſe; twelve rays in the branchioſtegous membrane; body ſcaly.

Amia *calva*. The Mud-fiſh. With a black ſpot on the tail.

Inhabits Carolina.

AMIA.

This is the only ſpecies of the genus. It is a freſh water fiſh, of a roundiſh form; it is ſeldom eaten.

GEN. XXXVIII. SILURUS. Head naked, large, broad, and compreſſed; mouth furniſhed with cirrhi; gape and throat wide; lips thick; the mandibles dentated; tongue thick, ſmooth, and very ſhort; eyes ſmall; from 4 to 16 rays in the branchioſtegous membrane; body elongated, compreſſed; devoid of ſcales; covered with viſcid ſlime; the lateral line near the back; the firſt ray of the pectoral fins, or of the dorſal fin ſpiny, dentated backwards;

1. Silurus *Glanis*. The fly Silurus. With one ſoft dorſal fin; ſix cirrhi.

Inhabits Europe and the Eaſt.

This is the largeſt of all freſh water fiſhes, as it grows to the weight of 300 pounds, and to the length of 24 feet; it is ſluggiſh, and waits for the fiſhes and aquatic birds, on which it preys as they ſwim by; it lives long after being taken out of the water; it produces but few ova, and theſe are devour- by Sticklebacks and Eels; when young it is harraſſed by Frogs; on the approach of ſtormy weather it comes up to the ſurface; it grows and ſwims ſlowly; it is eſculent; thick ſpotted with black, greeniſh towards the abdomen, and of a yelloviſh white below.

2. Silurus *electricus*. The electric Silurus. With one adipoſe dorſal fin; and ſix cirrhi.

Inhabits Africa.

This fiſh is found in the rivers of Africa, and when touched, gives a ſhock like the electric ſhock, but not ſo ſtrong as that from the Torpedo or Gymnotus. It is about 20 inches long; very broad before, depreſſed, and of an aſh-colour, with ſome blackiſh ſpots towards the tail; it is eatable.

GEN. XXXIX. TEUTHIS. Head ſomewhat truncated before; five rays in the branchioſtegous membrane;

'EUTHIS.

brane; teeth in a ſingle row, equal, rigid, and cloſe.

There are only two ſpecies of this genus; both of them foreign.

'euthis *Hepatus*. The Tang. With a recumbent moveable ſpine on each ſide of the tail.

Inhabits Carolina.

The ſpines on each ſide of the tail of this fiſh are erected as weapons of defence when it is attacked; they are ſtrong and ſubulated, lying in a ſulcus when not erected; the colour of this fiſh is blue, and it is reckoned good eating.

GEN. XL. LORICARIA. Head ſmooth, depreſſed; mouth without teeth, and retractile; ſix rays in the branchioſtegous membrane; body covered with a hard cruſt.

Loricaria *cataphracta*. The hard Loricaria. With one dorſal fin, and two cirrhi.

Inhabits South America.

This fiſh is about a foot long. The body is divided into ſegments, (like that of the Syngnathus,) in number 32. It inhabits the rivers of Surinam.

There is another ſpecies of this genus with two dorſal fins, alſo an inhabitant of the freſh waters of Surinam.

GEN. XLI. SALMO. Head ſmooth and compreſſed; mouth large; lips ſmall; tongue white, cartilaginous and moveable; eyes middle-ſized, and lateral teeth in the jaws and the tongue; from four to ten rays in the branchioſtegous membrane; the operculum conſiſting of three laminæ; body elongated, covered with round ſcales minutely ſtriated; back ſtraight; lateral line ſtraight, and near the back; the hinder dorſal fin adipoſe; many rays in the ventral fins.

SALMO.

The moſt of the fiſhes of this genus live in rapid ſtreams of pure water, running over ſand or pebbles, and ſeem to diſlike muddy waters; a few of them frequent the ſea, but enter the rivers for the purpoſe of depoſiting their ſpawn in the ſpring; by many devious wanderings they return in autumn to the ſea. They feed on other fiſhes. They are adorned with a variety of colours, and their fleſh is exquiſite. The anus is near the caudal fin.

The genus is divided into 4 ſections.

* TRUTTÆ: *the body variegated.*

1. Salmo *Salar*. The Salmon. The upper maxilla projecting beyond the under.

Inhabits chiefly the northern ocean. ♇.

The Salmon when in rivers is gregarious, ſwimming in the middle of the ſtream, and making a noiſe as it ſwims; in ſtormy weather it lies peaceably at the bottom; it is frightened at a red colour, but attracted with white. Beſides fiſhes, its prey is worms and inſects. It grows very quickly; is ſometimes ſix feet long, and weighs upwards of 70 pounds. It is much coveted for the table, and forms, in many countries, a very conſiderable article of commerce. Salmon begin to quit the ſea and aſcend the rivers in the month of November; the impulſe which urges them to this progreſs is irreſiſtible; they aſcend the moſt rapid rivers for hundreds of miles, and ſpring over cataracts ſeveral feet in height. When they have attained a place fit for their purpoſe, the male and female join in forming a receptacle for their ſpawn in the ſand or gravel about 18 inches deep, which they afterwards cover up, and having performed this duty, they haſten back to the ſea, being now very poor and lean. The ſpawn continues buried till ſpring; about the latter end of March the young are excluded, and when they are 4 or 5 inches long, they are called Smelts or Smouts. About the beginning of May they ſwarm in the rivers in myriads; but the firſt flood ſweeps them all down into the ſea, ſcarcely leaving any behind. About the middle of June theſe begin to return into the rivers; they have now grown to the length of 12 or 16 inches long, and continue growing till the end of July or beginning of Auguſt, when they get the name of Gilſes, and are then from ſix to nine pounds weight. The ſeaſon for fiſhing Salmon begins in January.

2. Salmo *Eriox*... The Grey. With aſh-coloured ſpots; the extreme part of the tail equal.

Inhabits

SALMO.

Inhabits the European ocean. B.

This ſpecies likewiſe aſcends the rivers, but not till Auguſt, when it ruſhes up with great violence. It weighs from 13 to 20 pounds.

3. Salmo *Trutta*. The Sea Trout. Spotted with black ocelli, the middle browniſh; ſix dots on the pectoral fins.

Inhabits the European Seas. B.

This ſpecies connects the Salmon with the common Trout, the Fario. About the end of the year, it depoſits its ſpawn in the rivers, and lives on fiſhes, worms, and inſects. It is ſometimes above two feet long; black above; the ſides with a gloſs of blue and green; white below, covered with ſmall ſcales.

4. Salmo *Fario*. The common Trout. With red ſpots; the under jaw a little longer than the upper.

Inhabits Europe, Siberia, &c. B.

The Trout is found in rivers, and in mountanous and alpine torrents and ſtreams; it is in general about a foot long; it ſwims very ſwiftly, and leaps high out of the water; beſides ſmall fiſhes, it likewiſe feeds on worms, inſects, and ſmall teſtaceous animals, not even ſparing its own ſpecies; it is very prolific, and lays its ſpawn in September; it is the favourite food of the Grayling; it is covered with ſmall narrow ſcales, variegated above with blackiſh ſpots; black on the ſides above the lateral line, with a tinge of greeniſh-yellow; below the lateral line of a golden colour, with red ſpots on a bluiſh ground; below white; the under jaw of this, and of the former ſpecies, is ſubject to a ſort of curvature when they are out of ſeaſon. This ſpecies is the favourite diverſion of the angler. Like the Salmon, it makes up to the heads of rivers to ſpawn.

5. Salmo *Carpio*. The gilt Char. Leſs than a foot long; with five rows of teeth in the palate.

Inhabits the rivers of England and Wales. B.

This ſpecies is like the following, but the iris of its eyes is white; it is of a ſilvery colour, ſpotted with white on the ſides, and leſs red below.

6. Salmo *alpinus*. The Char. Back black, the ſides bluiſh, the belly reddiſh-yellow.

Inhabits Lapland, Sweden, Switzerland, &c. B.

This

SALMO.

This fiſh is found in the lakes of alpine regions, and is rarely known in running ſtreams. In autumn it approaches the ſhores which are ſhaded with trees, and in February it ſpawns. It is covered with ſmall ſcales. It is the moſt delicate of the genus for the table. It lives chiefly on the Gnat, the Culex *pipiens*.

* * *Osmeri: The dorſal and anal fins oppoſite.*

7. Salmo *Eperlanus*. The Smelt. The head tranſparent; 17 rays in the anal fin.

Inhabits Europe. B.

In Scotland, and in ſome parts of England, this ſpecies is called the Spirling or Sparling. In ſpring, it aſcends the rivers, in vaſt numbers, for the purpoſe of ſpawning; it is exceedingly prolific; lives but a ſhort time out of the water, feeds on worms, but chiefly on the ſmaller ſhell-fiſh; has a particular and very ſtrong ſmell; is almoſt tranſparent, ſhining, and covered with ſmall deciduous ſcales; it is much reliſhed at table by ſome; but its ſingular ſmell diſguſts others.

* * * *Corregoni: Teeth ſcarcely perceptible.*

8. Salmo *Lavaretus*. The Guiniad. The upper maxilla the longeſt; 14 rays in the dorſal fin.

Inhabits the northern European ſeas. B.

This ſpecies not only inhabits the ſea and aſcends the rivers for ſpawning, but is found in the lakes of the alpine parts of Europe, ſuch as thoſe of Scotland and Wales. In Lochlomond it is called the Powan. It ſometimes grows to the length of 15 inches, and weighs between 3 and 4 pounds; but its general length is ten inches.

9. Salmo *Albula*. The Juvangis. The jaws without teeth, the under one the longeſt.

Inhabits Europe. B.

This ſpecies is found in Lochmaben in Scotland, and no where elſe; it is ſaid to have been carried thither from England in the time of Robert Bruce. It is thickly covered with roundiſh, entire, black ſpotted imbricated ſcales; of a greeniſh-brown colour, and ſilvery on the ſides.

10. Salmo *Thymallus*. The Grayling. The upper jaw the longeſt; 23 rays in the dorſal fin.

Inhabits Europe and Siberia. B.

This ſpecies lives in pure and rapid ſtreams, ſwimming ſwiftly, and growing quickly; it is about 2 feet long, and feeds

SALMO.

feeds on ſhell-fiſh, aquatic beetles, and ſmall fiſhes, and on the ſpawn of the Trout and Salmon; it depoſits its own ova, in April and May, among the ſtones at the bottom, which, when full grown, are about the ſize of a pea; it ſoon dies when taken out of the water; it is the common food of aquatic birds, and therefore is not a numerous ſpecies; its fleſh is white, and of an exquiſite taſte; it is of a long ſhape, with large ſcales of a greeniſh-black colour above, variegated with cinereous, and blue on the ſides, and white below.

Under the laſt ſection of CHARACINI, with only 4 rays in the branchioſtegous membrane, there is no Britiſh ſpecies.

GEN. XLII. FISTULARIA. Roſtrum cylindrical, with maxillæ at the apex; ſeven rays in the branchioſtegous membrane.

Fiſtularia *tabacaria*. The Tobacco-pipe fiſh. The tail bifid, with a long ſeta growing from it.

Inhabits America and Japan.

This fiſh, in ſhape, ſomewhat reſembles the Syngnathi; it is of a brown colour.

GEN. XLIII. ESOX. Head ſomewhat flat above; mouth and gullet wide; the mandibles dentated, unequal, the upper one plane, the under one punctured; tongue broad and looſe; palate ſmooth; eyes round, middle-ſized, and lateral; noſtrils double, near the eyes; opercula large, aperture wide, from 7 to 12 rays in the membrane; body elongated, covered with hard ſcales, convex above, compreſſed at the ſides; the lateral line ſtraight, neareſt the back, ſcarcely perceptible; the dorſal and anal fins very ſhort and oppoſite.

1. Eſox *oſſeus*. Great Garfiſh. The upper jaw the longeſt, the ſcales bony.

Inhabits North America and Aſia. B.

This ſpecies has been taken off the coaſt of Suſſex. It has ſcales of a rhombic figure; the row upon the back round and emarginated; it is about two feet or more long.

2. Eſox

ESOX.

2. Esox *Lucius*. The Pike. The rostrum depressed and nearly equal.

Inhabits Europe, the north of Persia, &c. B.

The Pike is an inhabitant of the fresh waters; it grows and swims very swiftly; it is from 8 inches to 8 feet long; it lives to a great age, and, it is said that one arrived at 267 years; it is very voracious, and thus is exceedingly injurious to ponds; it devours birds, mice, lizards, and dead carcases; it is in its turn, when young, harrassed by the Perca *fluviatilis*, and *Lucioperca*, and by birds; from February to April it deposits its spawn among grass or reeds, which is eagerly devoured by birds of the genus Anas, and by them disseminated. It is a good eating fish.

3. Esox *Belone*. The Sea-Pike. Both jaws subulated.

Inhabits the ocean. B.

This species frequents the deep seas, migrating from March to June in shoals towards the shores, for the purpose of depositing its spawn; it generally precedes the Mackrel; it is the frequent prey of Seals and the Cod-fish; it is but seldom eaten; it sometimes grows to 4 feet long, but its common length is a foot and a half; it is of a narrow, long, and slender shape, black above, of a greenish-blue on the sides, with thin oblong scales, and white below; its bones are green and shine in the dark.

4. Esox *Saurus*. The Saury. The rostrum subulated, with spurious fins between the dorsal and caudal fins.

Inhabits the British seas. B.

This species is often cast ashore on the coast of Scotland. In Cornwall it is called the Skipper. The jaws form a rostrum, the eyes are large, the body anguilliform, the tail much forked; the back dusky, the belly bright and silvery.

GEN. XLIV. ELOPS. Head smooth; numerous small teeth in the margin of the maxilla, and in the palate; 30 rays in the branchiostegous membrane; armed in the middle externally with 5 teeth.

Elops *Saurus*. The great Saurus. The tail armed with a spine above and below.

Inhabits Carolina.

There

ELOPS.

There is but one ſpecies of this genus; and it differs from the genus Salmo only in the want of the adipoſe fin.

GEN. XLV. ARGENTINA. Teeth in the jaws and tongue; 8 rays in the branchioſtegous membrane; the anus near the tail; the ventral fins with many rays.

Argentina *Sphyræna*. The Argentine. With 9 rays in the anal fin.

Inhabits the Mediterranean. B.

This ſpecies has been found in the Britiſh ſeas, but is not common. The moſt ſingular character is its ſwimming bladder, which is conical at both ends, the outſide conſiſting of a foliaceous ſilvery ſkin uſed in the making of artificial pearl.

GEN. XLVI. ATHERINA. The upper maxilla a little flat; 6 branchioſtegous rays; a ſilvery ſtripe along the ſide.

Atherina *Hepſetus*. About 12 rays in the anal fin.

Inhabits the Mediterranean and Red Seas. B.

This ſpecies is very common in the ſea near Southampton. It ſpawns in June, and is taken all the year round, except in hard froſt; it is between four and five inches long; ſemipellucid; the colour ſilvery, tinged with yellow, with a row of ſmall black ſpots below the lateral line.

GEN. XLVII. MUGIL. Lips membranaceous; the under one carinated within. No teeth; a ſmall inflected tooth above the opening of the mouth; 7 branchioſtegous rays; the opercula ſmooth and rounded; body whitiſh.

Mugil *Cephalus*. The Mullet. With five rays in the firſt dorſal fin.

Inhabits the European ocean. B.

The Mullet prefers the ſhores to the deep ſeas; it is found in plenty on the ſandy ſhores of this iſland, and haunts the ſmall bays which have influxes of freſh water. It is gregarious, and roots like a hog in the ſand or mud. It is an excellent fiſh for the table.

GEN. XLVIII. EXOCOETUS. Head ſcaly; no teeth; the jaws convex on both ſides; 10 branchioſtegous rays. Body whitiſh; belly angulated; pectoral fins very long, fit for flying, the rays carinated before.

Exocoetus *volitans*. The flying fiſh. The abdomen carinated on both ſides.

Inhabits the European and American ocean. B.

This ſpecies has been taken on the Britiſh coaſts. It is the moſt common flying-fiſh. It is perpetually harraſſed by the Coryphæna *Hippurus*, the Bonito and Albicore, which force it to riſe into the air for ſafety, where it is immediately attacked by the Frigate bird and Albatroſs; it can fly but a ſhort way.

The *evolans*, another ſpecies, likewiſe flies, and differs but little from the preceding.

GEN. XLIX. POLYNEMUS. Head compreſſed, and ſcaly; with a very obtuſe and prominent roſtrum; 5 or 7 branchioſtegous rays. Looſe digiti at the pectoral fins.

The ſpecies of this genus are all exotic: they differ from the genus Trigla in the ventral fins being placed on the abdomen, and in the digiti not being articulated.

Polynemus *quinquarius*. Five fingered Polynemus. With five digiti longer than the body.

Inhabits America.

This ſpecies is about 9 or 10 inches long. The filiform appendages at the baſe of the pectoral fins, are bony, and two of them are twice as long as the body.

GEN. L. CLUPEA. Head compreſſed; mouth compreſſed and denticulated within; the maxillæ unequal, the upper furniſhed with ſerrated myſtaces; tongue ſhort, rough with teeth turned inwards; eyes middle-ſized, round and marginal; gills internally ſetaceous; the opercula conſiſting of 3 or 4 plates,

CLUPEA.

pates, 8 rays in the membrane. Body compreſſed, elongated, covered with ſcales; lateral line ſtraight, near, and parallel to the back; the under part of the abdomen forming a ſerrated ridge; the ventral fins often with nine rays; the caudal long and forked.

1. Clupea *Harengus*, The Herring. Without ſpots; the under jaw the longeſt.

Inhabits the northern European and Atlantic oceans. B. The annual migration of Herrings in ſpring, from the icy ſeas where they have paſſed the winter, to more ſouthern latitudes, has been called in queſtion by ſome late Naturaliſts, who maintain that Herrings, like many other ſea fiſh, frequent the deep ſeas, and approach the ſhores and the rough bottoms of the ſhallower places for the purpoſe of ſpawning. This happens at different times, and accordingly Herrings do not all come at the ſame ſeaſons. In autumn, however, they depart, like other ſea and river fiſhes, and repair to their accuſtomed haunts. Their food is ſmall fiſhes and ſea worms, particularly a ſmall ſpecies of Crab, the Cancer *Halecum*, which abounds in the Norwegian ſeas. When the Herrings have fed on this inſect, their inteſtines are found full of a reddiſh matter, which proceeds from the red ova of the crab. In this ſituation they do not take ſalt well, and in the opinion of ſome are ſick at the time. When they are preparing to ſpawn nothing is ever found in their ſtomachs, which is the caſe likewiſe with Salmon and other fiſhes; even ſome ſpecies of Phoca, at breeding time, live for months without almoſt eating any thing. Herrings are preyed on by various fiſhes and other animals, ſuch as the Balæna *Myſticetus*, the Delphinus *Orca*; the ſea birds, particularly the Pelecanus *baſſanus*, which attends them in their courſe from their winter to their ſummer retreats†; the

† The Solan geeſe generally quit the Baſs in September or October, to follow the ſhoal of Herrings which frequent theſe ſhores in autumn, and which then proceed ſouthward. But another ſhoal of Herrings having now for ſome ſeaſons viſited the Frith of Forth and continued the whole winter, great numbers of Solan geeſe, particularly, it is ſaid, thoſe of two years old, have remained in the Frith where their favourite food is abundant, and are thus ſaved the trouble of a ſix months migration.

CLUPEA.

Larus *fuſcus*, &c. the Salmo *Lavaretus* and *Trutta*, &c. The Herring is very prolific, the roe of one containing at leaſt 10,000 ova; accordingly a ſhoal conſiſts of myriads, and they form a moſt valuable article of commerce. The Herring is a northern fiſh, being ſeldom found farther ſouth than the coaſt of France.

The Pilchard is conſidered as a variety of the Herring: it differs in being ſhorter and in having the body leſs compreſſed; its roſtrum is ſhorter and turns up; the under jaw is ſhorter than the upper; the back more elevated; the belly not ſo ſharp; the dorſal fin is exactly in the centre of gravity; the ſcales are larger, and adhere more cloſely.

2. Clupea *Sprattus*. The Sprat. With 13 rays in the dorſal fin.

Inhabits the northern and Mediterranean ſeas. B.

This ſpecies is from four to five inches long. It ſpawns in autumn, when it approaches the ſhores in ſwarms innumerable.

3. Clupea *Aloſa*. The Shad. Black ſpots on the ſides; the roſtrum bifid.

Inhabits the Mediterranean and the northern European, American and Aſiatic oceans. B.

In May and June the Shad aſcends the rivers, and depoſits its ſpawn in rapid ſtreams. In autumn it returns. It is from two to three feet long, lives on worms and inſects; it is preyed on by the Siluri, Pikes and Perches. It is deteſted by the Ruſſians and the inhabitants of the Wolga, although it is much reliſhed elſewhere, and in India its ova are as highly eſteemed, as Caviar is by the Ruſſians. It is covered with large ſcales which eaſily come off.

4. Clupea *Encraſicolus*. The Anchovy. The upper jaw the longeſt.

Inhabits the northern European Ocean, the Atlantic, and Mediterranean. B.

The Anchovy is about a ſpan long; it draws near the ſhores, and lays its ſpawn from December to March. It formed the beſt garum, the ſauce the Romans were ſo fond of, and, in the preſent day, when the head is taken off and the inteſtines extracted, it is reckoned a moſt delicate pickle.

GEN.

GEN. LI. CYPRINUS. Without teeth; mouth in the apex of the head, and bifulcated; 3 rays in the branchioſtegous membrane; body ſmooth and whitiſh; ventral fins in general with 9 rays.

The moſt of the Cyprini are inhabitants of the freſh waters, and highly eſteemed as food; they feed on clay, mould, worms, inſects, leguminous and aquatic plants, and a few on other fiſhes; ſome of them migrate; moſt of them ſpawn in April and May; their head is compreſſed, with white, ſhining, horny ſcales; their forehead is blackiſh and broad, their back arched; the branchial aperture wide, the opercula conſiſt of 3 plates; the noſtrils double, the mouth nearly round; the lips cartilaginous, covered with a thick ſkin, tongue very ſhort; the officles of the palate rough, the mandibles below the gills dentated, the inteſtinal canal continuous from the mouth to the anus; the liver conſiſts of two lobes; the air-bladder is white and ſhining.

* *Barbati*, with cirrhi at the mouth.

1. Cyprinus *Barbus*. The Barbel. The anal fin with 7 rays; 4 cirrhi; the ſecond ray of the dorſal fin ſerrated on both ſides.

Inhabits Europe and the north of Perſia. B.

The Barbel is found in rivers, and rapid ſtreams with ſtony bottoms; it lurks in holes; it lives on the Chelidonium, on ſhell-fiſh and other vermes, on ſmall fiſhes, and even on dead carcaſſes; it grows quickly, and lives to a great age; it is from 2 to 15 feet long, tenacious of life, elongated, and, covered with ſtriated, denticulated, and firmly adhering ſcales; it is the worſt and coarſeſt of freſh water fiſh.

2. Cyprinus *Carpio*. The Carp. With 9 rays in the anal fin; 4 cirrhi; the ſecond ray of the dorſal fin ſerrated behind.

Inhabits Europe and the north of Perſia. B.

The Carp is found in ſtill and gently flowing ſtreams; it grows quickly to be 4 feet long; it arrives at a great age, (160 years), and is tenacious of life; its colour and taſte differ according to the nature of the water in which it lives. It feeds on herbs, fat earth, worms, aquatic inſects, and dung of ſheep; in May and June it aſſociates in graſſy places to ſpawn; a fiſh of three pounds weight will produce 237,000 ova, and one of nine pounds 621,600 ova; its enemies are other

CYPRINUS.

other fiſhes, aquatic birds, and frogs; it was introduced into England in 1514, and into Denmark in 1560; its bile is uſed as a green pigment; of its ſpawn is made a ſpecies of caviar, and of its ſwimming bladder iſinglaſs.

3. Cyprinus *Gobio*. The Gudgeon. With 11 rays in the anal fin; 2 cirrhi.

Inhabits Denmark, Germany, Pruſſia, &c. B.

This fiſh is an inhabitant of lakes; but in ſpring aſcends rivers; ſpawns in May, and returns in autumn to the lakes; it is tenacious of life, and very prolific; it lives on graſs, worms, and other fiſhes juſt excluded from the ova, and even on the fragments of carcaſſes; it is itſelf devoured by other fiſhes and aquatic birds; it is 8 inches long, narrow, with large ſcales, ſpotted; and its fleſh is good eating.

4. Cyprinus *Tinca*. The Tench. With 25 rays in the anal fin; the tail entire; the body ſlimy; two cirrhi.

Inhabits ponds and ſtagnant waters every where. B.

The Tench lives long out of the water; and its fleſh is a wholeſome and delicious food; it grows to be 8 lbs. weight.

* * *The caudal fin undivided.*

5. Cyprinus *Caraſſius*. The Crucian. Ten rays in the anal fin; the lateral line ſtraight.

Inhabits Europe and Siberia. B.

This fiſh loves ſtagnant waters with a muddy bottom; it is eaſily reared in ponds; it lives on mud, graſs, and worms; it is tenacious of life; it grows ſlowly, and ſcarcely exceeds a pound in weight; it is much infeſted by the Lernæa cyprinacea; it ſpawns but once in two years, generally in May, ſometimes in April; it depoſits 93,700 ova; its fleſh is good.

* * * *The caudal fin trifid.*

6. Cyprinus *auratus*. The Goldfiſh. With two anal fins, the caudal tranſverſe and bifurcated.

Inhabits China, Japan, &c. B.

This is a river fiſh, and is now domeſticated in Britain. It was firſt brought to Europe in 1691 from China, where it is kept for amuſement in porcelaine vaſes; or, in the ſmall baſons that decorate the courts of the Chineſe houſes. They grow in our ponds to the length of 8 inches, and are remarkable

CYPRINUS.

markable for the beauty and ſplendour of their colours, which, however, vary greatly. They live on bread, on dunghill-meat, and ſmall fiſhes; they are killed by the ſeeds of the Bidens tripartita, which ſtick in their gullet.

* * * * *The caudal fin bifid.*

7. Cyprinus *Phoxinus*. The Minow. With 8 rays in the anal fin; a brown ſpot at the tail; the body tranſparent.

Inhabits Europe and Siberia. B.

The Minow is found in ſmall gravelly ſtreams; it is gregarious but keeps at a diſtance from other fiſh; it ſwims near the ſurface, as it likes heat; it feeds on herbs and worms; is very prolific; ſpawns but once in 3 or 4 years, about the end of June; it is a beautiful little fiſh; the lateral line is of a golden colour, but the ſides and belly vary greatly.

8. Cyprinus *Leuciſcus*. The Dace. With 18 rays in the anal fin, 9 in the dorſal.

Inhabits Germany, France, Italy, &c. B.

The Dace lives in pure ſtreams; it is from 6 inches to a foot and a half long; it feeds on flies, gnats, and worms; it ſpawns in June, and is very prolific; it ſwims with great agility; it is but coarſe eating.

9. Cyprinus *Rutilus*. The Roach. With 12 rays in the anal fin; the ventral rays of a blood-red colour.

Inhabits Europe and the north of Perſia. B.

The Roach delights in clear and ſtill waters, with a ſandy or marly bottom; it is gregarious; it grows from a pound to two pounds weight; in the middle of May it ſpawns, producing about 54,570 green ova, which grow red when boiled; it lives on aquatic plants and vermes, and is preyed upon by the larger fiſhes and aquatic birds; it is covered with broad ſcales; is of a ſilvery colour, the back of a greeniſh black.

10. Cyprinus *erythrophthalmus*. The Rud. With 15 rays in the anal fin; the fins red.

Inhabits the northern parts of Europe. B.

The Rud is from 10 inches to a foot in length, covered with large, thin, ſilvery ſcales; it lives a conſiderable time after being taken out of the water; in April it depoſits on the aquatic plants about 91,720 ova; it lives on inſects worms,

CYPRINUS.

worms, and graſs, and is preyed on by the voracious freſh water fiſh, and the Anſeres.

11. Cyprinus *Alburnus*. The Bleak. With 20 rays in the anal fin.

Inhabits Europe. B.

The Bleak grows from 4 to 10 inches: it is of a ſilvery colour, the back olive; it has ſmall ſhining ſcales which eaſily fall off, and are uſed in the making of artificial pearl: it is gregarious.

12. Cyprinus *Brama*. The Bream. With 27 rays in the anal fin; the fins brown.

Inhabits Europe. B.

The Bream is found in Lakes with a bottom of marl, clay, or plants; it is likewiſe found in ſlow rivers; it grows from two to two feet and a half in length. In ſpring it comes to the ſhores or goes into the rivers; and in May it depoſits about 137,000 ova; it is the favourite prey of the Buteo, the Colymbi, and Mergi; it is tenacious of life, grows quickly; is broad and thick when full grown; has large ſcales; and is a very fine fiſh for the table.

§ 221.

Fiſhes are kept in collections, either in ſpirits or the ſkins ſtuffed with hair or wool; or the half of the fiſh is filled with gypſum, and ſtuck upon a board; but the beſt method is to take one half of the ſkin of the fiſh with the dorſal, anal, and caudal fins attached and extended; and, in this ſtate to dry it with the branchioſtegous membrane diſplayed; it may then be paſted on paper, and kept in a book like a dried plant.

Terms

Terms uſed in the Claſs MAMMALIA.

ABDOMINALES, mammæ, ſituated on the belly.
Abrupta, cauda, much ſhorter than the body.
Acaulia, cornua, having no principal ſtem.
Adipoſa, pinna, in Whales, a rayleſs fleſhy fin.
Annua, cornua, that are ſhed every year.
Annulata, cornua, ſurrounded with circular rings.
Antibrachium, the arm from the elbow to the wriſt.
Aruncus, the beard of a Goat.

B.

Barba, ſubcaud, long hairs on the chin or throat.
Barbata, auricula, &c. with tufts of hair.
Biſulci, pedes, divided hoofs.
Brachium, the arm from the ſhoulder to the elbow.

C.

Canini, dentes, canine-teeth, eye-teeth, or dog-teeth.
Capilli, long hair, generally applied to that on the head.
Caruncuiæ, fleſhy excreſcences, as in the Cervus Alces.
Cetacea, animalia, of the Order of Cete, Whales, &c.
Cilia, the eye-lashes.
Compreſſum, corpus, the diameter from ſide to ſide, leſs than from back to belly.
Cornua, perennia, not annually ſhed, perſiſtent.
Criſtatæ, nares, furniſhed with a membranous creſt.
Cuneati, dentes, wedge-ſhaped.

D.

Depreſſum, corpus, &c. flat and thin, perpendicularly, the contrary of Compreſſum.
Didactylus, having two toes or fingers.
Diſticha, cauda, where the hairs point in two different ways.
Divaricata, cornua, ſituated oppoſite and diverging.

E.

Edentulæ, maxillæ, without teeth.
Elongata, cauda, of the ſame length with the body.
Exſerti, dentes, ſtanding out, as in the Sus Babyruſſa.
Extenſilis, lingua, that can be thruſt far out.

F.

Filiformis, lingua, thread-ſhaped, almoſt of equal breadth.
Fiſſa, lingua, as in Seals, bifid.
Fiſtula, the opening of the ſpiracle or air-hole in Whales.
Floccoſa, cauda, ending in a tuft of hair, as in the Lion.
Foliatus, naſus, having a membranous appendage, as in ſome Bats.
Folliculus, a bag or pouch, generally containing an odorous humour.
Foſſorii, pedes, formed for digging; ſtrong, with large toes.

G.

Gibbus, a protuberance, the hunch on the back of the Buffalo, &c.

I.

Inciſores, the primores, fore-teeth or cutting-teeth, when they have a broad and acute edge.
Inguinales, mammæ, ſituated between the hind legs.
Juba, the mane, long hairs on the neck and back.

L.

Lacunoſum, labium, having a hole in it.
Lana, wool, ſoft and criſped hairs.
Laniarii, dentes, the eye-teeth, canine-teeth, or dog-teeth.
Lunata, cornua, in the figure of a creſcent.
Lyrata, cornua, bent nearly in the form of the antient lyre.

M.

Manus, the hand; when inſtead of a great toe there is a thumb placed at a diſtance from the other toes or fingers.
Membrana nictitans, an internal covering of the eye, peculiar to ſome Apes, the Bear, the Badger, &c.

Molares,

Molares, dentes, the grinders or back teeth.
Myſtax, a tuft of Vibriſſæ about the mouth.

N.

Nares, the noſtrils, always two.
Natatorii, pedes, made for ſwimming, the toes being connected by a membrane.
Nuda, cauda, &c. without hair.

O.

Occurſantes, dentes, placed oppoſite.

P.

Palearia, the Dew-lap; Palearia laxa, the ſkin of the neck hanging looſe.
Palma, the hand, the fore-foot.
Palmati, pedes, the toes connected by a membrane.
Pectorales, mammæ, ſituated on the breaſt.
Pedes, the feet in general.
Planta, the hind foot.
Prehenſilis, cauda, which takes hold like a hand.
Primores, dentes, fore-teeth or cutting-teeth.
Proboſcis, a moveable prolongation of the noſe, as in the Elephant.

R.

Reclinata, cornua, lying backwards.
Recurvata, cornua, forming a curve, the convexity pointing backwards.
Reduncа, cornua, bent forwards.
Reſimus, naſus, turned down.
Reſupinata, cornua, bent inwards.
Retractilis, lingua, an extenſile tongue that can be drawn in again.

S.

Seta, a briſtle.
Setoſum, corpus, covered with briſtles, as in the Hog.
Simus, naſus, turned up and ſhorter than the lips.
Solidungula, a ſolid undivided hoof.
Solitarii, canini dentes, ſingle, one on each ſide.
Spatulati, dentes, ſhaped ſomewhat like a ſpoon.
Spinæ, ſpines or thorns; the quills on the Porcupine and Hedge-hog.
Spiracula, in Whales, air-holes in the head from which they eject air and water.
Spuriæ ungulæ, falſe hoofs.
Squamæ, ſcales; the ſmall plates which cover the body of the Manis.

Succenturiati, tali, falſe hoofs.
Summitas, cornuum, the extremity or ends.
Suturæ, the ridge formed by the meeting of hairs which lie in different directions.

T.

Teſta, the cover on the Daſypus.
Tophus, the hunch on the Camel.
Tragus, the cartilage of the ear.
Truncata, cauda, ſhorter than the body.

U.

Vibriſſæ, ſtiff hairs about the mouth.
Ungues, broad nails.
Unguiculæ, pointed claws.
Ungulæ, hoofs.

Terms in ORNITHOLOGY.

A.

ABDOMEN, the region between the apex of the breaſt-bone and the anus.
Acuminatum, roſtrum, &c. terminating in a ſubulated point.
Acuta, penna, ſharp pointed.
Acutiſſimum, roſtrum, terminating in a very ſharp, needle-like point.
Acutum, roſtrum, terminating in an acute angle.
Adſcendens, roſtrum, bent upwards archwiſe.
Aduncum, roſtrum, unguis, bent into an incurved hook.
Aequalis, cauda, the points of the Rectrices, when expanded, forming a ſtraight line.
Aequilibres, pedes, not placed behind like the Contigadæ.
Alæ, the wings, two lateral members, ſerving for flight, and aſſiſting in running and ſwimming.
Alula notha, baſtard wing, a ſmall joint riſing at the end of the middle part of the wing or cubitus, on which are three or five feathers.
Ambulatorii, pedes, three toes unconnected before, one behind; formed for walking.
Angulatum, roſtrum, marked with more than two hollow longitudinal angles.

Arcuatum,

Arcuatum, roſtrum, bent like an arch.
Armilla, in ſome birds, a coloured ring on the naked part of the thigh above the knees.
Artus, the limbs, comprehend the wings, tail, and feet.
Aures, the ears, truncated, without prominences, often covered with decompoſed feathers.
Auriculas, peculiar to ſome ſpecies of Owl, two creſts formed of erect feathers, placed above the eyes on the crown of the head.
Axillæ, the ſides of the breaſt, under the baſe of the wings.
Axillaris, ſpina, where the pollex ends naked at the baſtard wing in a recurved, horny, ſharp point.

B.

Barba, ſimple feathers, with lax pendulous rays.
Bicalcaratæ, tibiæ, with two ſpurs on each leg.
Bifida, criſta, divided by a ſtraight line into two parts.
Bifurcata, cauda, the exterior tail-feathers hook-ſhaped.
Brachyura, cauda, ſhorter than the feet.
Breve, roſtrum, ſhorter than the head.
Breves, pedes, ſhorter than the trunk.
Breves, digiti, ſhorter than the tibia.
Breviſſimi, pedes, much ſhorter than the trunk.
Breviſſimi, digiti, ſeveral times ſhorter than the tibia.
Breviſſimum, roſtrum, much or ſeveral times ſhorter than the head.

C.

Calcar, a ſpur, placed on the poſterior part of the tibia.
Callus, the tuberculated poſterior part of the ſole of the foot.
Canaliculatum, roſtrum, a deep furrow running longitudinally along the upper ſurface.
Capiſtrum, the margin of the head behind the bill; the ſhort feathers juſt above the bill.
Carinatum, roſtrum, the top forming an acute longitudinal ridge.
Caruncula, a fleſhy excreſcence upon the head, generally naked, and ſoft.
Caruncula, cera, covered with fleſhy tubercles and wrinkles.
Cera, a membrane or naked ſkin, often coloured, covering the baſe of the bill.
Cervix, the upper part of the neck, from the nucha to the back.
Ciliata, lingua, the tongue edged with fine briſtles, as in the Anates.
Compedes, the feet hid within the cover of the abdomen; placed ſo far behind as to make the bird walk with difficulty, as if in fetters.

Compreſſum,

Papilloſa, cera, ſprinkled with fleſhy elevated papillae.
Palpebrae, moveable external membranes for ſhutting the eyes.
Pectinati, pedes, with cartilaginous pectens on each ſide of the toes.
Pectus, the region which covers the ſternum between the neck and the abdomen.
Pedes, the feet, uſed for walking, ſtanding, and ſwimming; they conſiſt of the Femora, Tibiæ, Digiti, and Ungues.
Penna, an organ fixed by the baſe into the body of birds in a quincunx order; a hollow cylinder running into a ſubquadrangular arched rachis, plane above, channelled below, and feathered on both ſides.
Pennatae, alae, with ciliated remiges, ſerving for flight.
Perviae, nares, communicating with each other.
Phalanges, the articulations of the toes.
Piloſae, pennae, with flaccid, lax, elongated rays.
Pileus, the top of the head, above the roſtrum, eyes, and nucha, and including the frons, the vertex, and occiput.
Pinnati, pedes, each articulation of the toes furniſhed with a particular membrane, like a lateral lobe.
Pinniformes, alae, dilated and covered with a membrane quite deſtitute of remiges, aſſiſting in ſwimming.
Plantae, the under part of the toes.
Planum, roſtrum, having a flat equal ſurface.
Planiuſculum, roſtrum, nearly plane.
Plicatilis, criſta, which can be depreſſed or erected at pleaſure.
Plumae, branched hairs, with flaccid, ſcattered, and ſomewhat branched rays.
Polyedrum, roſtrum, with many flat ſides.
Porrectum, roſtrum, projecting ſtraight from the head.
Primores, remiges, quill-feathers, the largeſt feathers of the wings, or thoſe that riſe from the firſt bone; they are in general narrower than the reſt at the exterior margin, ſtraighter and more acute.
Prominulae, nares, elevated above the plane or ſurface of the bill.
Punctae, ſmall roundiſh ſpots, chiefly black, or of a darker colour than the reſt.
Papillae, the aperture in the eye for admitting the rays of light to the retina.
——— perpendicularis, oblonga, acute and dilatable.

R

Rectiuſculum, roſtrum, almoſt ſtraight.

Rec

Rectrices, the tail feathers—they are ſtrong, elongated, equal, inſerted into the poſterior margin of the uropygium, lying over one another ſideways. In moſt birds 12 in number, in ſome 18, and often only 10.

Rectum, roſtrum, ſtraight, without any curvature.

Recumbentes, pennæ, preſſed cloſe, the apex towards the back.

Recurvata criſta, turned up and forming an arch.

Recurvatum, roſtrum, bent upwards.

Reflexa, criſta, hanging down perpendicularly.

Regio ophthalmica, round the eyes.

—— parotica, round the ears.

Remiges, flag feathers, ſtrong and elongated, inſerted into the inferior margin of the wing, lying over one another, and over the ſecondary feathers.

—— apice membranaceæ, the apex terminating in a ſmall compreſſed membrane, ſhining, coloured, and laneeolated.

—— acuminatæ, terminating in a ſubulated point.

—— ſerratæ, in Owls, the outer margin having looſe rays, ſo as to appear ſerrated.

Reverſæ, pennæ, the apex turned upwards.

Revolutæ, pennæ, twiſted ſpirally forwards.

Rigidæ, pennæ, that will not bend.

Roſtrum, the beak, a horny, elongated, naked part, conſiſting of an upper and under mandible, forming the opening of the mouth, including the tongue, and perforated by the noſtrils.

Rotundata, cauda, the points of the tail feathers, when expanded, deſcribing the ſection of a circle.

S

Scanſorii, pedes, two toes before, two behind, formed for climbing.

Scapulares, the feathers inſerted in the humerus, often elongated.

Scapus, the quill of the larger feathers.

Secundariae, the feathers that riſe from the ſecond bone of the wing.

Semicylindricum, roſtrum, part flat, and part cylindrical.

Semilanati, pedes, covered with hairy curled feathers.

Semipalmati, pedes, the toes before connected by a membrane, at the baſe only.

Serratum, roſtrum, the margin toothed like a ſaw.

Seſſilis, unguis, ſitting, without any toe.

Setoſa, criſta, conſiſting of ſetaceous feathers.

Setaceæ, pennæ, lax, the rachis ending in an unfledged ſeta.

Sparſa, criſta, the feathers diſpoſed without order.

Speculum, a ſhining coloured ſpot in the anterior margin of the coverts.
Spinæ, arms for fighting, beſides the bill, the ſpurs and nails.
Sternum, calloſum, a part of the ſternum covered with a callofity.
Stria, a broad line.
Striga, ſlender faſciæ, like hairs.
Strictæ, pennæ, perpendicular, without flexure.
Subadſcendens, roſtrum, turning gradually upwards.
Subarcuatum, roſtrum, a little arched.
Subquadrangulare, roſtrum, with four prominent longitudinal blunt angles.
Subventanea, ova, that have not been fecundated.
Subulatum, roſtrum, &c. linear at the baſe, growing attenuated towards the point.
Sulcatum, roſtrum, marked with deep hollow furrows.
——— tranſverſim, marked with deep perpendicular furrows.
——— longitudinaliter, the furrows directed from the baſe to the point.
——— oblique antrorſum, the furrows proceeding from the upper part of the baſe to the margin of the mandible obliquely.
——— oblique retrorſum, the furrows proceeding from the top of the mandible at the point, to the margin of the mandible at the faux.
Supercilium, a line above the palpebrae of a different colour from the other feathers.

T

Taenia, a belt, band, or ribband.
Tectrices primæ, leſſer coverts, the ſmall feathers that lie in ſeveral rows, on the bones of the wings, moſt remote from the remiges.
——— ſecundæ, the greater coverts, the feathers that lie immediately over the quil-feathers and ſecondary feathers, neareſt the remiges.
——— ſuperiores, upper coverts, the feathers that cover the wings and remiges above.
——— inferiores, under coverts, the feathers that cover the wings and remiges below.
Tempora, the temples, the region between the eyes and the ears.
Teres, roſtrum, without angles.
Teretiuſculum, roſtrum, with hardly any perceptible angles.
Tibia, the leg, between the thigh and the toes.

Tridactylus,

Tridactylus, pes, wanting the back toe.
Trigonum, roſtrum, with three prominent longitudinal angles.
Truncatæ, pennæ, at the apex terminating in a tranſverſe line.
Truncatum, roſtrum, terminating in a tranſverſe line, as if cut off.
Tubulatum, roſtrum, forming a tube, with two half cylinders.

U.

Verſatilis, digitus, a toe that can be turned either backwards or forwards, as in ſome of the Owls.
Vertex, the middle part of the Pileus.
Vibriſſæ, ſtiff hairs, diſpoſed like a fringe on each ſide of the mouth.
Ungues, nails or claws, at the extremity of the toes.
Unguiculatum, roſtrum, with an unguis at the end, as in the Anates, &c.
Uropygium, the feathers that cover the baſe of the tail. A ſmall heart-ſhaped ſeſſile body, conſiſting of a double gland containing a pore filled with an unctuous matter, ſituated below next the anus.

Terms in ICHTHYOLOGY.

A.

ABDOMEN, the under part of the trunk, between the poſterior extremity of the thorax and the origin of the tail.
Abdominales P. V. placed in the belly behind the pectoral fins, and not fixed in the ſternum but in the oſſa pelvis.
Abnormes, oculi, either large, or ſmall in proportion to the ſize of the fiſh.
Abnormis, apertura branchialis, diſproportioned.
Abrupta, linea lateralis, divided into two or more parts not contiguous, not touching.
Acanthopterygii, an order of fiſhes, containing thoſe with ſpiny fins.
Aceroſi, dentes, needle-ſhaped, very ſmall and ſharp pointed.
Acetabulum, the ſame with Scutella.
Aculeatæ, branchiæ, the concave or interior part having ſpines inſtead of tubercles.
Aculeatum, caput, armed with ſharp points or ſpines.

Aculei,

Aculei, little, ſimple, pungent bones, rarely bifid, naked, not covered with a membrane like the ſpines of the fins.
Acuminata, opercula, the hinder plate running out into a ſharp proceſs.
Acuminatae, P. D. the officle in the middle longeſt, thoſe before and behind ſhorter.
Acuti, dentes, ſharp at the points.
Acutum, caput, roſtrum, terminating in an acute angle.
Adipoſae, pinnae, covered with a thick ſkin.
Adnatae, P. D. placed ſo near that they ſeem but one fin.
Aequales, maxillae, of the ſame length and breadth.
Aequilibrantes, P. D. placed in the middle of the back, ſo as that the body may be in equilibrium when ſuſpended by them.
Alepidotum, corpus, without ſcales.
Analis, pinna, the anal fin, placed in the abdomen between the anus and the tail; perpendicular when expanded.
Anceps, corpus, roſtrum, the two oppoſite angles acute.
Annexa, lingua, its motion impeded by a ligament.
Annexa, opercula, connected with the body by means of a membrane.
Annulatum, corpus, ſurrounded by rings or elevated lines.
Anomalae, branchiae, ſome ciliated, others tuberculated or of a different ſtructure.
Anteriores, nares, occupying the fore part of the roſtrum.
Anticus, anus, near the head.
Anus, the external orifice of the rectum.
Apertura, branchialis, a cleft commonly lateral, which opens between the opercula and the trunk by means of the gills.
Apodes, an order of fiſhes, including thoſe which want the ventral fins.
Apparens, membrana branchioſtega, appearing under the margin of the operculum.
Approximati, oculi, near each other, when they occupy the upper part of the head.
Apterygium, dorſum, &c. without fins.
Arcuatus, rictus, not in a ſtraight line.
Articulatum, corpus, covered with connected lamellæ or plates.
Artus, fins, parts of the body radiated with ſmall bones, which are fixed in a doubled membrane; the inſtruments of ſwimming.
Aſſurgentes, P. D. with very long officles.

B.

Bicoloratum, corpus, the colour of one ſide different from that of the other.

Bifida,

Bifida, lingua, deeply emarginated.
Bifurca, P. A. the officles in the middle ſhorteſt.
Bilabiatae, maxillae, a double lip on each jaw.
Binae, nares, two openings on each ſide.
Binati, oculi, both on one ſide of the head, as in the Pleuronectes, Flounder.
Branchiae, the gills, the principal organs of reſpiration, ſituated between the head and the trunk; they are ſeen by lifting up the operculà, by folding or keeping contracted the branchial membrane by which the aperture gapes. They conſiſt, for the moſt part, of four crooked, parallel, unequal bones, furniſhed on the outer or convex part with ſmall ſoft appendages like the beards of a feather, generally of a red colour, for excluding the water from the throat, and afterwards, by the motion of the opercula and branchioſtegous membrane, for throwing it out. On the inſide they are rough with tubercles.
Branchioſtegi, the Amphibia Nantes of Linnaeus; ſuch fiſhes as want the operculum or the branchioſtegous membrane.
Breve, roſtrum, ſhort in reſpect of the body or other parts of the head.

C.

Caelata, opercula, hollow lines running without any order.
Carinata, lingua, gula, &c. angulated underneath.
Carinatae, maxillae, the lower jaw longitudinally ridged, either without or within.
Carinatum, corpus, the back rounded, the under part of the belly acute through its length.
Carnoſa, lingua, of a fleſhy, muſcular ſubſtance.
Carnoſa, opercula, covered with a muſcular ſubſtance and a thick ſkin.
Cartilaginea, lingua, the ſubſtance almoſt bony.
Cataphractum, corpus, covered with a hard callous ſkin or with hard bony ſcales.
Cathetoplateum, corpus, the perpendicular diameter longer than the horizontal; thin from ſide to ſide; compreſſed.
Cauda, the ſolid part of the trunk, formed by the lumbar vertebrae and muſcles, ſituated behind the anus, and terminating the trunk.
Caudalis, pinna, the tail fin, fixed in a vertical poſition to the extremity of the trunk.
Cervicalis, apert. branch. high up on the ſides of the head, or in the neck, as in the Muraena Conger.
Chondropterygii, the Amphibia nantes of Linnaeus; they have not

not true bones, but merely cartilages; and the rays of their fins are cartilagineous, hardly differing from a membrane.

Ciliata, opercula, the margin ſet with membranous ſetaceous or parallel appendages.

Ciliatae, ſquamae, the margin ſet with ſetaceous proceſſes.

Cirrhus, a briſtly membranaceous appendage, hanging from the maxillae or mouth.

Cirratae, cirroſae, maxillae, having cirrhi, ſometimes on the upper alone, and ſometimes only on the under.

Clauſa, opercula, connected with the body by means of a membrane.

Clypeatum, caput, covered with a clypeus.

Clypeus, a flat body, oval and marginated, with tranſverſe parallel pectinated lamellae.

Coalitae, P. B. placed ſo near that they ſeem but one fin.

Coalita, P. A. united with the caudal fin.

Coalita, P. C. united with the dorſal and anal fins.

Compoſitae, pinnae, having both rays and ſpines.

Confertae, ſquamae, heaped upon one another.

Conferti, dentes, crowded, not diſpoſed in regular order.

Conicum, corpus, cylindrical, but growing gradually more ſlender towards the tail.

Connatae, pinnae, joined by a membrane.

Convexi, oculi, projecting a little beyond the orbit.

Convexum, dorſum, higher in the middle than towards the ſides.

Cotyledon, cotula, the ſame with Scutella.

Craſſa, lingua, the perpendicular diameter large.

—— membr. branch. formed of a fat or fleſhy ſkin.

Criſtatum, caput, furniſhed with pinnulae.

Cultratum, corpus, the back ſomewhat flat, the angle below acute.

Cuneiforme, corpus, growing gradually narrower towards the tail.

———— caput, wedge-ſhaped, growing gradually narrower towards the roſtrum.

Curva, linea lateralis, with an obvious flexure.

Cuſpidata, P. C. attenuated at the apex, or terminating in a ſetaceous point.

Cuſpidatum, roſtrum, the apex terminating in a briſtle.

Cylindricum, roſtrum, projecting into a tube.

D.

Deciduae, ſquamae, eaſily falling off.

Declinatae,

Declinatae, P. D. high near the origin, and growing gradually ſhorter as they approach the tail.
Deflexum, roſtrum, bent downwards.
Dentata, lingua, covered with teeth, differing in figure and proportion.
Dentatae, maxillae, with teeth.
Denticulatae, maxillae, with ſmall equal teeth of the ſame kind.
Denticulata, lingua, ſet with teeth equal in ſize and figure.
Denudatae, branchiae, wanting opercula.
——— maxillae, wanting lips.
Deſcendens, caput, declining gradually archwiſe from the eyes to the roſtrum.
——— linea lateralis, deſcending obliquely from the head or nucha to the tail.
Dentes, teeth, in fiſhes, ſerving only for catching and holding their prey, not for maſticating their food as in the Mammalia.
Dextri, oculi, both placed on the right ſide of the head.
Diacanthum, corpus, armed with two ſpines.
Didactylae, pinnae, divided by two rays without ſpines.
Difformes, P. V. having a ſpine or cirrhus, beſides the officles.
Digitus, a ſetaceous, articulated, moveable appendage, adhering to the trunk between the pectoral and ventral fins.
Dimidiata, opercula, not entirely, but only in part, covering the aperture of the gills.
Dipterygia, cauda, the fin divided to the baſe.
Dipterygium, dorſum, &c. with two fins.
Diſtinctae, P. D. detached, diſtinctly ſeparated from one another.
Diſſimiles, dentes, ſome acute, others obtuſe.
Divergentes, dentes, the apices of two contiguous teeth ſtanding wide or diſtant from each other.
Dorſales, pinnae, the back fins, varying in number from one to four.
Dorſum, the upper part of the trunk, beginning from the nucha and extending to the origin of the tail.

E.

Edentulae, maxillae, deſtitute of teeth.
Emarginata, P. C. but little cleft, the terminating line notched.
Emarginatae, dentes, nearly biſid.
Enſiforme, corpus, ſword-ſhaped, gradually attenuated from the head to the tail.
Exigui, cirrhi, ſhorter than the head.
Exiguus, rictus, much narrower than the head.

Exoleta, pinna, as if worn.
Expanſa, membrana branchioſtega, projecting beyond the margin of the operculum.
Extuberans, abdomen, prominent, turgid, oppoſed to carinatum.

F.

Falcatae, P. P. concave below, arched above.
Faſciatum, corpus, marked with tranſverſe zones from the back to the belly.
Fiſtuloſa, opercula, the branchial opening ſeeming to be excavated out of the ſubſtance of the opercula.
Fiſtuloſus, rictus, having a narrow, round, and deep orifice.
Flexilia, opercula, that can be bent.
Flexuoſa, linea lat. bent in a waving line.
Fornicatae, maxillae, furniſhed with a membranaceous velum, attached before, looſe behind, within which, and the upper or under part of the mouth, the fiſh lays its tongue, or diſcharges water from its mouth.
Fraenata, opercula, connected with the body by means of a membrane.

G.

Gemina, linea lat. two on each ſide.
Geminae, P. P. two on each ſide.
Geminae, nares, two openings on each ſide, as in moſt fiſhes.
Gibbum, corpus, the back as if humped.
Glabra, lingua, without papillae, or teeth.
Glabra, linea lat. without ſpines or tubercles.
Glabrum, corpus, the ſcales without angles, furrows, roughneſs, or inequality.
Glabrum, palatum, covered with a ſmooth ſkin.
Granuloſi, dentes, of the ſize and ſhape of ſmall grains.
Globoſum, corpus, round, ſpherical.
Gula, that part of the trunk which correſponds to the branchial apertures, and placed between them.
Gularis, membr. branch. placed under, in the throat, not in the ſides.
——— anus, ſituated under the opercula of the gills.

I.

Ima, Infima, linea lat. ſituated on the lower part of the ſide.
Imberbe, caput, imberbes maxillae, without cirrhi.
Immobilis, dentes, fixed at the baſe.

Im-

Imbricatæ, ſquamæ, partly covering one another, like the tiles on a houſe.
Inæquales, nares, where there are two openings on each ſide, the anterior is always the leaſt.
Incompletæ, branchiæ, wanting the operculum, or the branchioſtegous membrane, or both.
Inconſpicua, membr. branch. not to be ſeen without breaking the operculum.
Inconſpicua, linea lat. hardly perceptible.
Inerme, caput, &c. without aculei or tubercles.
Inferæ, maxillæ, on the under part of the head.
Inferus, rictus, below the roſtrum, or in the under part of the head.
Infima, membr. branch. ſituated below in the throat not in the ſides.
Infracta, linea lat. part declining from the other part with an obtuſe or acute angle.
Inflexum, roſtrum, bent upwards.
Ingens, rictus, exceeding the breadth of the head.
Integra, lingua, not cut or indented at the point or on the margin.
Integra, P. C. not bifid, the ends of the rays forming a ſtraight line.
Interruptæ, P. D. the oſſicles in the middle ſhorteſt, thoſe near the head and the tail longeſt.
Iris, of the eye, coloured, ſurrounding the pupil, and often furniſhed with a diſtinct ring.
Jugulares P. V. placed under the throat before the pectoral fins, and fixed to the clavicles.

L.

Labia, lips, obvious only in a few fiſhes, particularly in the genera of Sparus and Labrus: either bony or fleſhy.
Labiatæ, maxillæ, one lip in each jaw.
Laeve, corpus, the ſcales ſmooth, not angulated or furrowed.
Laevia, opercula, ſmooth, but not ſhining.
Lanceolatum, corpus, oblong, attenuated at both extremities.
Latera, that part of the trunk from the gills to the anus, between the back and the abdomen.
Laterales, oculi, occupying the middle of the ſide of the head, as in moſt fiſhes.
Lateralis, membr. branch. ſituated on the ſides.
Libera, opercula, capable of elevation and depreſſion.
Libera, lingua, its motion impeded by no ligament.
Linearis, rictus, not arched or crooked.

Lineatum, corpus, with very narrow ſcattered ſtreaks.
Litura, a tranſverſe line.
Linea lateralis, a line running upon the ſides from the head to the tail, cauſed by a want of ſcales, or made by tubercles or a carina.
Lobatum, roſtrum, divided into two or more parts.
Lobati, P. C. bifid, but the portions unequal.
Longitudinales, pinnae dorſales, running the whole length of the back.
Longitudinalis, P. A. extending from the anus to the tail.
Longiſſimae, P. P. longer than the head.
Lorica, a hard bony ſhell, covering part or the whole of the body.
Loricata, linea lat. rough with ſmall bones or hard ſcaly tubercles.
Loricatum, corpus, covered with a hard integument, or ſcales ſo cloſely united as to ſeem but one.
Lubricum, corpus, laid over with a tenacious mucus or humour.
Lucida, opercula, ſmooth and ſhining.
Lumbares, P. D. placed behind the middle of the back nearer the tail.
Lunatus, ſhaped like a creſcent.

M.

Macrolepidotum, corpus, covered with long ſcales.
Maculatum, corpus, marked with large ſpots of a different colour from the ground.
Magni, cirrhi, longer than the head.
Malacopterygii, an order of fiſhes containing thoſe with ſoft fins, or with fins having bony rays, but without ſpines.
Marginales, nares, in the apex of the roſtrum.
——— oculi, almoſt in the apex of the roſtrum.
Maxillae, the jaws.
Media, linea lat. ſituated in the middle of the ſide.
Mediae, nares, ſituated in the middle of the roſtrum.
Medius, anus, in the middle between the head and the tail.
Mediocres, cirrhi, of the ſame length with the head.
Mediocres, P. P. of the ſame length with the head.
Membrana, branchialis, the branchioſtegous membrane of Linnaeus and Artedi: it is a true fin, formed of cartilaginous crooked or hooked bones, joined by a thin membrane, lurking under the opercula, to which it adheres; it may be folded or expanded as neceſſity requires, and in its greateſt expanſion, is larger than the operculum: it ſerves for reſpiration.

Minimæ,

Minimae, P. P. ſhorter than the head.
Mobiles, maxillae, when they can be thruſt out or drawn in.
Mobiles, dentes, moveable at the baſe.
Monopterygium, dorſum, with only one fin.
Multiradiatae, P. V. with many rays, but ſeldom more than ſeven.
Muricata, cauda, rough with ſpines or tubercles.
Mutica, linea lat. without ſpines or tubercles.
Myſtaces, two ſmall bones, connecting the upper with the under-jaw, placed laterally to the upper, and aſſiſting the motion of opening the mouth.

N.

Nares, the noſtrils, the olfactory organs, almoſt always ſituated in the roſtrum, before the eyes.
Nitida, opercula, ſmooth and ſhining.
Nucha, the hind and under part of the head, by which it is joined to the trunk.
Nuda, opercula, not covered with ſcales or membrane.
Nudae, maxillae, without lips.
Nudi, oculi, having no nictitating membrane, and covered with their own tunics.
Nudum, corpus, deſtitute of ſcales.
Nulla, opercula, the aperture naked and open, as in all the branchioſtegous fiſhes.

O.

Obliquus, rictus, neither vertical nor horizontal.
Obliterata, linea lat. hardly viſible.
Oblongum, corpus, the longitudinal diameter many times exceeding the tranſverſe.
Obſoleta, linea lat. ſcarcely perceptible.
Obtuſum, caput, roſtrum, blunt.
Obtuſi, dentes, oblong and granuloſe.
Ocelli, round ſpots, like eyes on the ſkin
Occipitalis, apert. branch. on the hind part of the head.
Oculi, the organs of viſion, always two.
Occulta, membr. branch. not to be ſeen without breaking the operculum.
Opercula, branchialia; the poſterior part of the maxillae, eſpecially of the upper; they are ſituated on both ſides of the head behind the eyes, cloſing the aperture of the gills, covering and defending the branchiae, and ſuſtaining the branchial membrane.
Operculata, membr. branch. quite covered by the opercula.

Or-

Lineatum, corpus, with very narrow ſcattered ſtreaks.
Litura, a tranſverſe line.
Linea lateralis, a line running upon the ſides, from the head to the tail, cauſed by a want of ſcales, or made by tubercles or a carina.
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Loricatum, corpus, covered with a hard integument, or ſcales ſo cloſely united as to ſeem but one.
Lubricum, corpus, laid over with a tenacious mucus or humour.
Lucida, opercula, ſmooth and ſhining.
Lumbares, P. D. placed behind the middle of the back nearer the tail.
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Nucha, the hind and under part of the head, by which it is joined to the trunk.
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Operculata, membr. branch. quite covered by the opercula.

Or-

Orbiculatum, corpus, nearly round, the longitudinal and tranſverſe diameters about equal.

Os, the mouth, bounded on the ſides by the covers of the gills; behind by the throat or faux; above and below by the palate; it includes the teeth and the tongue, with the bones of the palate.

Ovales, nares, rounded at both extremities, the openings behind.

Ovata, apert. branch. one part opening wider than the other.

Ovatum, corpus, ſomewhat egg-ſhaped, the longitudinal diameter exceeding the tranſverſe, the baſe circular, the apex more acute.

P.

Palatum, part of the inſide of the mouth from the rictus to the inſertion of the oeſophagus; the underpart of the mouth likewiſe belongs to the palate, and forms the fauces

Palati officula, for the moſt part four, two on each ſide of the fauces, oval and nearly plane; often crowded with teeth, or rough with tubercles, or furrowed with tranſverſe rugæ, the baſe of the one connected with the apex of the other; the gills are attached to theſe officles on each ſide by a cartilage.

Papilloſum, corpus, covered with fleſhy points inſtead of ſcales.

Paralleli, dentes, of the ſame direction, length, and figure.

Parvus, rictus, much narrower than the breadth of the head.

Patens, membr. branch. projecting beyond the margin of the operculum.

Pectinatæ, branchiæ, the convex or exterior part, towards the branchial aperture, furniſhed with red ſetaceous rays or lamellæ.

Pectorales, pinnæ, the pectoral fins, generally two in number, one on each ſide of the thorax: they keep the fiſh in a vertical poſition.

Pectoralis, anus, ſituated below the gills, near the breaſt.

Pinnæ, the fins.

Pinnæ ſpuriæ, rayleſs fins, membranous, ſituated ſometimes on the ſides, or the belly, but oftenеſt on the back.

P. D. Pinnæ Dorſales.

P. P. Pinnæ Pectorales.

P. V. Pinnæ Ventrales.

P. A. Pinna Analis.

P. C. Pinna Caudalis.

Pinnula, a tentaculum, a briſtly, membranaceous, moveable appendage, ſituated between the eyes and ears, or backwards.

Pla-

Plagioplateum, corpus, the horizontal diameter exceeding the perpendicular; flat; depreſſed.
Plagiuri, with a horizontal tail. Theſe are not true fiſhes; they belong properly to the claſs of Mammalia.
Plana, gula, not ſwelling, on a level with the body.
Plani, dentes, flat on the ſides.
Plani, oculi, the bulb not projecting beyond the orbit.
Polyacanthum, corpus, armed with many ſpines.
Poroſa, linea lat. punctured with ſmall holes.
Poſtica, P. A. placed at the end of the tail, near the caudal fin.
Poſtici, oculi, diſtant from the roſtrum, nearer the forehead.
Poſtremæ, nares, ſituated near or above the eyes.
Proportionatus, rictus, about the ſame breadth with the head.
Protuberantes, oculi, prominent, much beyond the ſurface of the head.
Punctatæ, ſquamæ, punctured with ſmall dots.
Punctatum, corpus, marked with points, either longitudinally diſpoſed, or without order.
Pupilla, of the eye, cryſtalline, globoſe, or oblong.

R.

Radiata, operculà, with hollow lines, running like rays from the centre to the edge.
Radiatæ, P. D. conſiſting of ſoft, unprickly rays.
Radii, rays, ſoft, flexible, articulated, dichotomous officles in the fins. Malacopterygii.
Ramentaceæ, P. D. furniſhed with membranaceous ſimple or palmated appendages, adhering to the apex or ſides.
Raræ, ſquamæ, the interſtices between them appearing.
Recta, linea lat. running from head to tail, without bending or flexure.
Rectus, rictus, not arched or crooked.
Reflexum, roſtrum, incurved towards the belly.
Remotæ, nares, &c. at a diſtance from one another.
Remotæ, ſquamæ, ſeparated, not imbricated.
Remoti, oculi, lateral, and diſtant from each other.
Remotus, anus, near the tail.
Repandus, margo, waved, but plain.
Reticulatum, corpus, marked with lines forming the appearance of net-work, that is, ſome running from the head to the tail, others from the back to the belly, and thus interſecting one another.
Retroacta, membrana branchioſtega, not to be ſeen without breaking the operculum.

Ro-

Retroactae, branchiae, not conſpicuous, lying nearer the throat than the aperture.
Retroflexi, dentes, bent towards the throat.
Rictus, the anterior aperture of the mouth.
Rivoſa, opercula, furrows joined and running without order.
Roſtrum, the fore part of the head, extending from the eyes and the ears to the apex of the maxillae.
Rotundatae, nares, circular, the openings forward.

S.

Sagittati, dentes, ſhaped like the barbed point of an arrow.
Scapulares, pinnae dorſales, inſerted between the nucha and the middle of the back.
Scabrum, corpus, rough with prominent warts or tubercles.
Scutella, a fleſhy, orbicular, concave, marginated body, adhering to the abdomen like a breaſt-plate, for attaching the body to rocks by ſuction, ſometimes originating from the junction of the ventral fins and ſometimes ſituated looſe between them. *Gouan.*
Semiconici, dentes, like a cone cut through longitudinally, one ſide flat, the other convex.
Seminuda, apertura branchialis, covered only half by the operculum.
Semipatens, membrana branchialis, not quite covered by the operculum.
Semiſagittati, dentes, hooked on one ſide only.
Semitecti, oculi, having a nictitating membrane, which is arched or lunulated, or perforated like a ring.
Serratum, dorſum, having two ſerrated laminae for receiving the dorſal fin.
——— abdomen, the ſcales forming the carina ſtanding wide open at the apex.
Serrati, dentes, &c. toothed like a ſaw on the margin.
Setifera, P. C. with a filiform appendage proceeding from the diviſion.
Similes, dentes, of the ſame ſize and figure, that is, all acute, or all obtuſe.
Simplices, pinnae, conſiſting either of rays or of ſpines.
——— branchiae, equally furniſhed either with filaments or tubercles.
Simplicia, opercula, compoſed of a ſingle plate.
Simus, rictus, not prominent, not deep.
—— os, the lips turning up.
Siniſtri, oculi, both placed on the left ſide of the head.
Sinuata, P. A. the ſame with Interrupta.

Sinuoſa,

Sinuosa, linea lateralis, bent in a waving undulated line.
Solitaria, opercula, linea lateralis, &c. one only on each side.
Solitariae, nares, one opening on each side of the head, as in quadrupeds.
Soluta, lingua, loose, not impeded in its motion by any ligament.
Sparsi, dentes, not disposed in regular order.
Spinae, pinnarum, simple bones, (i. e. neither articulated nor dichotomous), stiff, and sharp pointed. Acanthopterygii.
Squamae, pellucid, cartilaginous or horny bodies covering the body of the fish.
Squamosum, corpus, covered with scales.
Striata, opercula, marked with hollow parallel lines.
Subarcuata, opercula, the posterior margin rounded.
Subquadratum, caput, in figure approaching to a square.
Subulatae, maxillae, nearly linear at the base, growing gradually attenuated towards the apex.
Sulcatum, dorsum, having a deep longitudinal furrow, for containing the dorsal fin.
Supera, linea lateralis, running near the back.
Superus, rictus, situated on the upper part of the head.
Supremae, maxillae, on the uppermost part of the head.
——— nares, on the crown of the head between the eyes and close to them.
Supremi, oculi, lateral, but placed high up.

T.

Tecta, membrana branchiostega, concealed under the opercula, but to be seen without hurting them.
Tecti, oculi, every where involved in the skin or a nictitating membrane.
Tenaces, squamae, adhering firmly to the body.
Teres, rostrum, nearly cylindrical, without corners.
Terminales, maxillae, at the apex of the rostrum.
Tetragonum, corpus, with four prominent longitudinal angles, the sides exactly plain.
Thoracicae, P. V. placed under the pectoral fins, often a little behind them, but always fixed to the sternum.
Thorax, part of the trunk, beginning at the extremity of the gula, and terminated by a line drawn to the origin of the pectoral fins.
Transversus, rictus, horizontal, the opening of the mouth cutting the fish transversely, so that, if continued, it would pass through the middle and separate the back from the belly.
Triacanthum, corpus, with three spines.

PLATE VI.

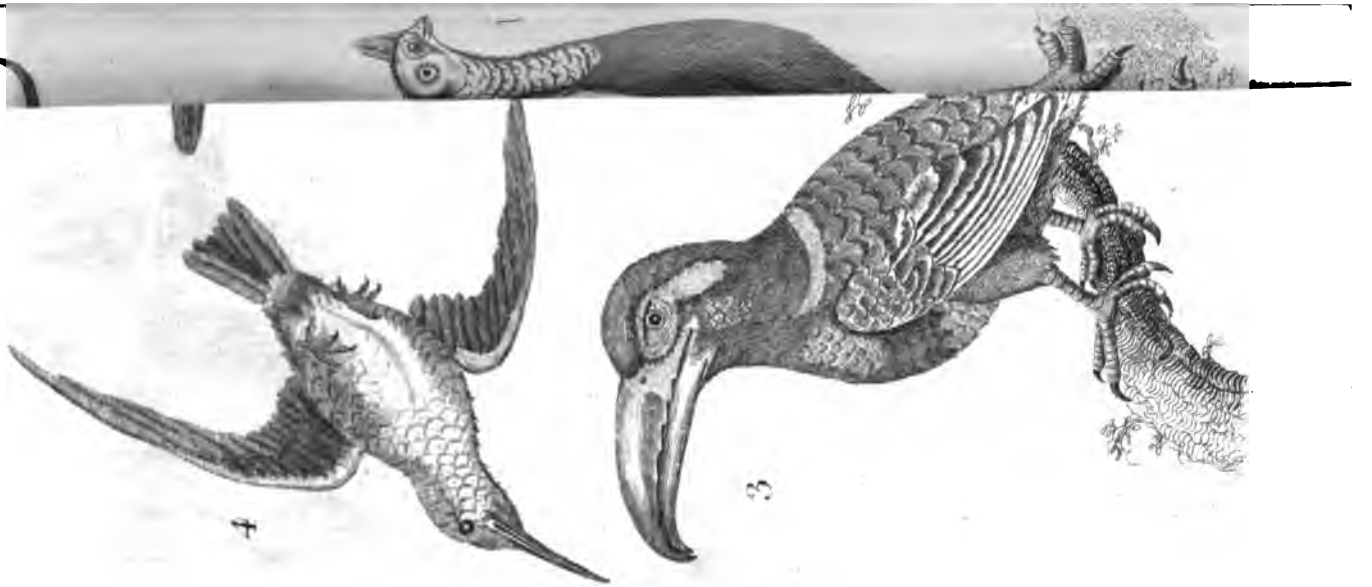

PLATE III.

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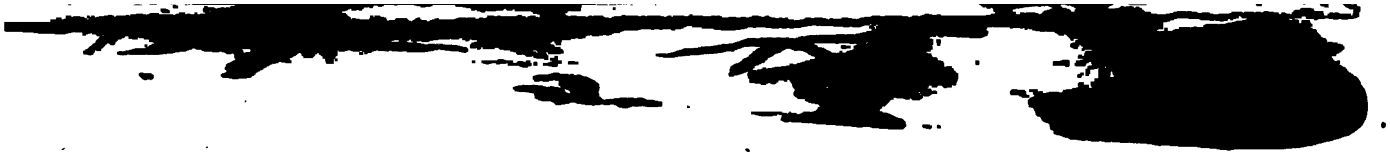

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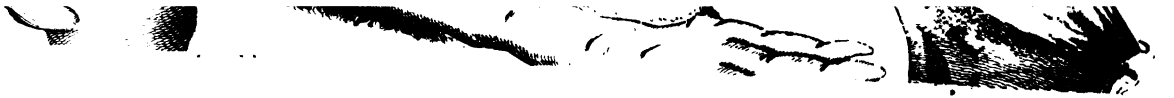

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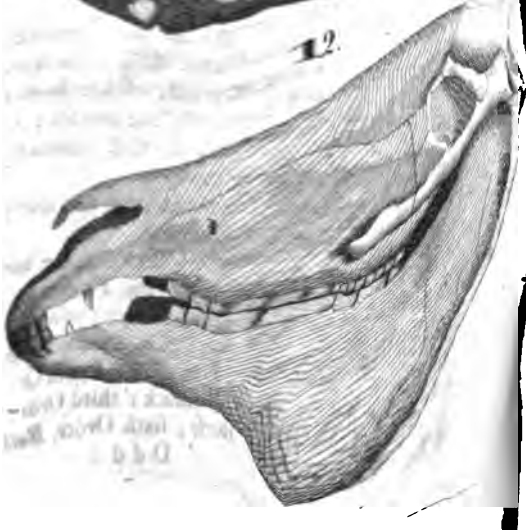

EXPLANATION

OF THE

PLATES.

PLATE I.

1. The human heart. (Page 28. § 64.) 1. The right ventricle. 2. The right auricle. 3. The left auricle. 4. The pulmonary veins of the left ſide; on the right ſide the branches are cut off. 3. The pulmonary arteries. 6. The Vena cava which empties itſelf into the right auricle. 7. The Aorta, as it riſes out of the left ventricle, to convey the blood to the head and upper members; with its deſcending branch. 8. The trunk of the pulmonary artery, as it iſſues from the right ventricle. 9. The junction of the ſame with the Aorta. 10. The left ventricle.

2. The heart of a Frog, (Page 28. § 64. and Page 267. § 174.), in its natural ſituation, a. the ventricle, b. the auricle, f. the arteries with their branches; thoſe at d. d. enter the lungs; e. e. go to the fore-feet: f. f. to the head; g. g. the pulmonary veins; i. i. h. h. their branches; k. the veins which return by the abdomen with their branches.

3. The ſame heart with the ventricle laid back to ſhew how the vein k. opens, not into the ventricle but into the auricle.

4. The heart of a Carp; a. the ventricle, b. the auricle c. the baſe of the Aorta. d. d. the branches going into the gills; e. the receptacle of the blood where it is collected before it paſſes into the auricle; f. f. the veins.

5. The heart of a Crab; a. the ventricle; b. b. the arteries; c. the Vena cava.

6. The heart of an Aplyſia; a. the artery; b. the principal vein; c. the ventricle.

7. The ſkull of an Ape; ſhewing the teeth of the firſt Order of the Mammalia, the *Primates*.

8. The ſkull of a Manis; ſecond Order, *Bruta*.

9. The head of a Wolf; third Order, *Ferae*.

10. The ſkull of the Porcupine; fourth Order, *Glires*.

11. The ſkull of the Roebuck; third Order, *Pecora*.

12. The ſkull of a Horſe; ſixth Order, *Belluae*.

PLATE II.

Fig. 13. A Whale; ſeventh Order of Mammalia *Cete.*
Fig. 1. The tooth of a carnivorous animal.
2. The tooth of a graminivorous animal.
3. The tooth of an animal, ſuch as man, which lives both on animal and vegetable food.
4. The Veſpertilio Moloſſus.
5. A cauda prehenſilis.
6. and 7. The fore and hind hands of an Ape.
8. A pes natatorius.
9. The foot of a Lion, which walks on the point of the feet; a. the heel.
10. The foot of a Bear, which walks on the whole foot to the heel. a.
11. The foot of the Rhinoceros.
12. The foot of the Elephant.

PLATE III.

Fig. 1. The Snow Bunting; a. the *frons*; b. the *vertex*; c. the *occiput*; d. the *nucha*; e. the *cervix*; f. the *gula*; g. the *jugulum*; h. i the *alula ſpuria*; k. k. the *tectrices* of the wings; l. the end of the back; m. the *criſſum*; 1. 10. the *primores*; 1. 2. the firſt and ſecond *rectrices* of both ſides.
2. The head of a Pheaſant; page 235.
3. The head of the Falco *Buteo*; page 153.
4. The head of the Lanius *Collurio*; page 160.
5. The head of the Mergus *Serrator*; page 188.
6. The pes grefſorius of the Alcedo.
7. The pes curſorius of the Charadrius.
8. The pes ſcanſorius of the Picus.
9. The foot of the Hirundo Apus.
10. The pes lobatus of a Grebe.
11. The foot of the Water-hen.
12. The half-connected foot of a Tetrao.
13. The pes palmatus of an Anas.

PLATE IV.

Fig. 1. The Caſſowary, Struthio *Caſuarius*; page 232.
2. The great Horn Owl, Strix *Bubo*; 159.
3. The green Toucan, Ramphaſtos *viridis*; page 164.

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4. The Humming-bird, Trochilus *Colubris*; page 178.
5. The Avoſet, Recurviroſtra *Avocetta*; page 225.
6. The Croſs-bill, Loxia *curvireſtra*; page 248.

PLATE V.

Fig. 1. The egg of a Frog; 1. b. the larva of a Frog after two days; 1, c. the larva after forty days; 1. d. the ſame after two months, when the tail is about to fall away.
2. The Rana *Pipa*; page 274.
3. The Lacerta *Chamælion*; page 279.
4. The Muræna *Siren*; page 320. fig. b. the mouth diſplayed.
5. The ſkeleton of the head of the Coluber *Berus*; a. the poiſonous fangs; b. the bones in which the fangs lie; c. the ſmaller teeth of the upper jaw; g. thoſe of the under jaw; d. and e. the cartilaginous fulcra of the jaws; f. the under jaw; page 281, 282.
6. The ſame ſtill covered with ſome of the ſoft parts; a. b. the fulcra to which the upper jaw is attached; c. the glands in which lies the poiſon; e. the canal through which it is diſcharged; f. a ſmall ſalivary gland.
7. The poiſonous fangs magnified in the ſocket.
8. The Crotalus *Duriſſus*; page 284.
9. The Raia *Torpedo*; page 304.

PLATE VI.

Fig. 1, The gills of a Carp; a. a. the officula palati; b. b. b. b. the branchiæ.
2. The Gymnotus *electricus*; a fiſh of the firſt Order; (*Apodes*); page 318.
3. The Callionymus *Dracunculus*; the ſecond Order; (*Jugulares*); page 324.
4. The Pleuronectes *Plateſſa*; and
5. The Trigla *volitans*; the third Order (*Thoracici*); page 332.
6. The Cyprinus *auratus*; the fourth Order (*Abdominales*). page 352.

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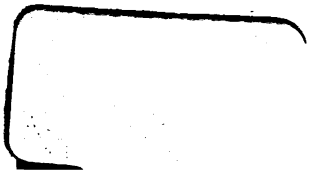
End of Volume Firſt.

ERRATA.

Page 132 to lines 19 and 28 add B.
—— 78, line 31, after *equinum*, insert Horse-shoe Bat.
—— 159, line 4, for Fig. 5. read Fig. 2.
—— 161 10 for Whinchat read Woodchat.
—— 163, 165, and 167, head-line, for ACCIPITRES read PICÆ.
—— 169, line 5, for *Carrula* read *Garrula*.
—— 248, line 26, read *floridus*
—— 285. line 22, for Americans read Indians.
—— 209, line 20, for Fig. 2. read Fig. 6.
—— 397, erase line 3, and insert 6. The Cut-water, Rynchops *nigra*. p. 209.

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